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I. STATUS OF CLAIMS

Claims 1-39 were pending for examination at the time of the office action.

Claims 1, 17, 33-35 and 38 are amended.

Claims 16, 32 and 39 are cancelled.

Claims 38 and 39 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. *See Examiner's Office Action*, p. 7-8 (3 November 2010).

Claims 1-37 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. *See Examiner's Office Action*, p. 8-13 (3 November 2010).

Claims 1-4, 7, 8, 10, 11, 13 and 33 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. (US Pub. No. 2002/0161751 A1) ("Mulgund") in view of Simon et al. (US Patent 7,665,126 B2) ("Simon"). *See Examiner's Office Action*, p. 13-18 (3 November 2010).

Claims 17, 38, and 39 stand rejected under U.S.C. § 103(a) as being anticipated by Mulgund et al. in view of Simon and in further view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al. ("Madden TAG"). *See Examiner's Office Action*, p. 19-20 (3 November 2010).

Claims 5-6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of in view of "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al. and in further view of Chiloyan et al.. *See Examiner's Office Action*, p. 20-21 (3 November 2010).

Claim 12 stands rejected under U.S.C. § 103(a) as being anticipated by Mulgund et al., in view of Simon, in view of Madden TAG and further in view of News Release article titled "Tiny Sensor-Based computers Could Help Track Wildlife dated Nov. 6, 2003 (hereinafter "News Release"). *See Examiner's Office Action*, p. 21-22 (3 November 2010).

Claim 16 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Mulgund et al. in view of Simon in view of "TinyDB: in network query Processing TinyOS" by Sam Madden (hereinafter "Madden TinyDB") and in further view of "Mate: A Tiny Virtual machine for Sensor Networks" by Levis et al. ("Levis") *See Examiner's Office Action*, p. 23-24 (3 November 2010).

Claims 17-32 and 34-37 stand rejected under U.S.C. § 103(a) as being anticipated by Mulgund et al. in view of Madden ACQP in further view of Simon. *See Examiner's Office Action*, p. 24-30 (3 November 2010).

Claims 38 and 39 stand rejected under 35 U.S.C. §103(a) as being anticipated by Mulgund et al. in view of Madden ACQP. *See Examiner's Office Action*, p. 30-31 (3 November 2010).

Claims 5-6 stand rejected under 35 U.S.C. §103(a) as being anticipated by Mulgund et al. in view of Simon and further in view of Madden TAG. *See Examiner's Office Action*, p. 18-24 (3 November 2010).

Claims 1-15, 17-31 and 33-38 remain pending for examination.

II. ISSUES TO BE REVIEWED

The issues in this response relate to whether the art of record establishes a *prima facie* case of the unpatentability of Applicant's claims. For reasons set forth elsewhere herein, Applicant respectfully asserts that the art of record does not establish a *prima facie* case of the unpatentability of any pending claim.¹ Accordingly, Applicant respectfully requests that Examiner hold all pending claims allowable for at least the reasons described herein, and issue a Notice of Allowance on same.

¹ Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the USPTO fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. *See, e.g.*, 37 C.F.R. § 10.83 ("A practitioner should represent a client zealously within the bounds of the law."); 37 C.F.R. § 10.84 ("[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part."); and 37 C.F.R. § 10.76 ("A practitioner should represent a client competently."). For these and other reasons, this document notes instances in which the USPTO inadvertently did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the USPTO's behalf.

III. ARGUMENT: ART OF RECORD DOES NOT ESTABLISH *PRIMA FACIE* CASE OF UNPATENTABILITY IN VIEW OF CITED ART OF RECORD

Applicant respectfully asserts herein that, under the MPEP and legal standards for patentability as set forth below, the art of record does not establish a *prima facie* case of the unpatentability of Applicant's claims at issue. Specifically, Applicant respectfully shows below that the art of record does not recite the text of Applicant's claims at issue, and hence fails to establish a *prima facie* case of unpatentability. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections and hold claims 1-15, 17-31 and 33-39 to be allowable over the art of record.

A. Technical Material Cited by USPTO (Mulgund et al. (U.S Application Number 2002/0161751), and Simon et al. (US Patent No. 7,665,126 B2), Madden TinyDB ("TinyDB: in network query Processing TinyOS") and Levis et al. ("Mate: A Tiny Virtual machine for Sensor Networks")) Do Not Show/Suggest Recitations of Amended Independent Claim 1 and Dependent Claims 2-15 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Independent Claim 1

Independent Claim 1 as presented recites as follows:

"1. A method comprising:

(a) aggregating at least a part of one or more mote-addressed content indexes from a first set of motes, administered by a first network administrator, and owned or controlled by a first business entity to form a first aggregated mote-addressed content index, said aggregating at least a part of one or more mote-addressed content indexes from a first set of motes further comprising:

transferring a multi-mote index creation agent, which aggregates at least a part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes, the transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote; and

(b) transferring at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity.”

Applicant has incorporated the recitations of claim 16 into independent claim 1. As shown following, (1) the USPTO has disregarded its duty to undergo the broadest reasonable interpretation consistent with the specification of Independent Claim 16 by an ill conceived mapping onto the USPTO -cited material, which fails to recite several express recitations of these claims; (2) the USPTO is asserting one or more characterizations that each cited reference “teaches” at least some of the text of Independent Claim 16, but has not provided any objectively verifiable evidence supporting these assertions; and (3) the USPTO has failed to adduce objective evidence of how to modify/combine the cited art to match the recitations of Independent Claim 16.

Under the MPEP standards as set forth herein, USPTO has not met his burden to establish a *prima facie* case of the unpatentability of amended Independent Claim 1 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that USPTO allow amended Independent Claim 1 and Issue a Notice of Allowability for same.

- a) **The USPTO Has Not Met Its Duty to Undergo a Broadest Reasonable Interpretation of Independent Claim 1 Consistent with the Specification through Attempts to Map Independent Claim 1 onto USPTO-Cited Technical Material that Fails to Recite Several Express Terms of Independent Claim 1 and Therefore the USPTO Has Not Met Its Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1**

As Applicant has incorporated the recitations of claim 16 into independent claim 1, applicant will provide arguments for claim 16. Concerning this, the USPTO has recently stated as follows:

“As to claim 16, Mulgund in view of Simon does not teach transferring a multimote index creation agent, which aggregates at least a

part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes. Madden TinyDB teaches that the TinyDB component is installed directly onto the mote by connecting the mote to the programming board (see page 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have a TinyDB component installed on the nodes of Mulgund in order to lower the number of message transmissions, latency, and power consumption comparing to the server-based approach of Mulgund (Madden TAG, section 4 under In- Network Aggregates).

Levis discusses a tiny virtual machine for sensor networks. In particular, Levis teaches packet sending and reception capsules that enable the deployment of ad-hoc routing and data aggregation algorithms. (see abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Simon and Madden TinyDB by transferring the multi-mote index creation agent (TinyDB component) from one mote to another mote, as taught by Levis (see section 4.4 Code Infection) in order to reprogram motes in the network when they are physically unreachable (i.e. can't be connected directed to the programming board, as taught by Madden TinyDB) (abstract of Levis).

It is noted that claim language "for installation" and "for receipt" indicates intended use. Therefore, these limitations are not given patentable weight. To that extend, a TinyDB installed on a mote is for installation [a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network and is a TinyOS component] (section 2 Introduction, page 5 of Madden TinyDB) and for receipt of at least a part of one or more mote-addressed content indexes of the second mote with the multi-mote index creation agent installed on the first mote (section 2.1 System Overview, page 7 of Madden TinyDB)."
Examiner's *Office Action*, p. 23-24 (3 November 2010).²

As set forth above, amended Independent Claim 1 recites as follows:

"1. A method comprising:

(a) aggregating at least a part of one or more mote-addressed content indexes from a first set of motes, administered by a first network administrator, and owned or controlled by a first business entity to form a first aggregated mote-

² Applicant respectfully asserts that USPTO has apparently not examined the recitations of Applicant's claims, but appears to have ignored the express language of both Applicant's claims and the USPTO-cited technical material. Accordingly, Applicant respectfully maintains that USPTO has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if USPTO had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

addressed content index, said aggregating at least a part of one or more mote-addressed content indexes from a first set of motes further comprising:

transferring a multi-mote index creation agent, which aggregates at least a part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes, the transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote; and

(b) transferring at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity.” (Emphasis Added)

It appears to Applicant that the USPTO has mapped “(a) ... **transferring a multi-mote index creation agent, which aggregates at least a part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes, the transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote;**” onto a configuration in Levis by which “A capsule sent in a packet contains a type (subroutines 0-3, clock, receive, send) and a version number. If Mate receives a more recent version of a capsule than the one of the specified type currently being used, Matte installs it.” (Levis, see section 4.4 Code Infection) Applicant notes that the USPTO has not explained how it reaches such mappings under the framework of the broadest reasonable interpretation consistent with the specification as is the USPTO’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description),³ and furthermore, Applicant points out that this mapping does not address at least the “the transferred multi-mote index creation agent including instructions 1) for

³ Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the USPTO fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. See, e.g., 37 C.F.R. § 10.83 (“A practitioner should represent a client zealously within the bounds of the law.”); 37 C.F.R. § 10.84 (“[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part.”); and 37 C.F.R. § 10.76 (“A practitioner should represent a client competently.”). For these and other reasons, this document notes instances in which the USPTO did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the USPTO’s behalf.

installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote.”

In view of the foregoing, Applicant points out that although Independent Claim 1 has been quoted in the present rejection, several claim terms have not been addressed in its analysis. Because the USPTO-cited material fails to recite at least the foregoing bolded recitations of Independent Claim 1,⁴ under the MPEP guidelines as set forth above, such material does not establish a *prima facie* case of the unpatentability of Independent Claim 1. For these reasons, Applicant respectfully asks the USPTO to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

- (1) **The USPTO is Characterizing/Asserting Mulgund et al. (U.S. Application Number 2002/0161751), and Simon et al. (US Patent No. 7,665,126 B2), Madden TinyDB (“TinyDB: in network query Processing TinyOS”) and Levis et al. (“Mate: A Tiny Virtual machine for Sensor Networks”) to “Teach” the Text of Independent Claim 1, But Does Not Support Its Characterization/Assertion, Therefore the USPTO Has Not Met Its Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1**

As Applicant has incorporated the recitations of claim 16 into independent claim 1, applicant will provide arguments for claim 16. The USPTO has stated as follows:

“As to claim 16, Mulgund in view of Simon does not teach transferring a multimote index creation agent, which aggregates at least a part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes.

Madden TinyDB teaches that the TinyDB component is installed directly onto the mote by connecting the mote to the programming board (see page 8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have a TinyDB component installed on the nodes of Mulgund in order to lower the number of message transmissions, latency, and power consumption comparing to the server-based approach of Mulgund (Madden TAG, section 4 under In-Network Aggregates).

⁴ Although Independent Claim 1 has been quoted in the present rejection, several claim terms have not been addressed in its analysis, as shown below.

Levis discusses a tiny virtual machine for sensor networks. In particular, Levis teaches packet sending and reception capsules that enable the deployment of ad-hoc routing and data aggregation algorithms. (see abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Simon and Madden TinyDB by transferring the multi-mote index creation agent (TinyDB component) from one mote to another mote, as taught by Levis (see section 4.4 Code Infection) in order to reprogram motes in the network when they are physically unreachable (i.e. can't be connected directed to the programming board, as taught by Madden TinyDB) (abstract of Levis).

It is noted that claim language "for installation" and "for receipt" indicates intended use. Therefore, these limitations are not given patentable weight. To that extend, a TinyDB installed on a mote is for installation [a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network and is a TinyOS component] (section 2 Introduction, page 5 of Madden TinyDB) and for receipt of at least a part of one or more mote-addressed content indexes of the second mote with the multi-mote index creation agent installed on the first mote (section 2.1 System Overview, page 7 of Madden TinyDB)."
Examiner's *Office Action*, p. 23-24 (3 November 2010).⁵

Applicant respectfully disagrees and traverses the rejection.

**(2) The USPTO Has Put Forth No Evidence
Supporting Its Characterization/Assertion That
Mulgund, Madden TAG, Simon and/or Levis
"Teaches" Recitations of Amended Independent
Claim 1**

Applicant respectfully points out that Applicant has reviewed those portions of Mulgund identified by USPTO, and so far as Applicant can discern, Mulgund does not recite the text of clause [a] of Applicant's amended independent claim 1. Rather, the portions of Mulgund identified by the USPTO (in the rejection of claim 1) recite as follows:

⁵ Applicant respectfully asserts that USPTO has apparently not examined the recitations of Applicant's claims, but appears to have ignored the express language of both Applicant's claims and the USPTO-cited technical material. Accordingly, Applicant respectfully maintains that USPTO has not established a *prima facie* case of the unpatentability of any pending claim for at least this reason. Notwithstanding the foregoing, Applicant demonstrates herein that even if USPTO had followed the MPEP examination guidelines, no *prima facie* case of unpatentability would be extant.

Method of and system for aggregating into a relational database model the state of an ad hoc network comprised of uniquely addressable distributed sensor nodes in communication using networking protocols with one another through links and to a database server through access points. A relational database logical design resident on the database server is dynamically updated with respect to the sensor network's current and historical topological information through the use of a traversal and interrogating network modeling agent. The distributed sensors nodes may be mobile, and may communicate by wired or wireless means through networking protocols such as the Internet.

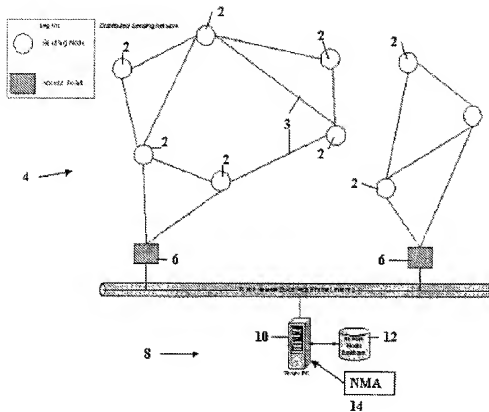
See *Mulgund* (Abstract)

The tools needed to implement the vision of seamless, global access to remote information are available only in part, and not yet as an integrated package. The Applicants describe below the development of an information architecture, which is referred to in certain embodiments as *Intelemetric™*, and a method of using the architecture which make it possible to aggregate, store, process, and distributed, real-time distributed sensor data into the enterprise, and make resulting information readily available over the Internet.

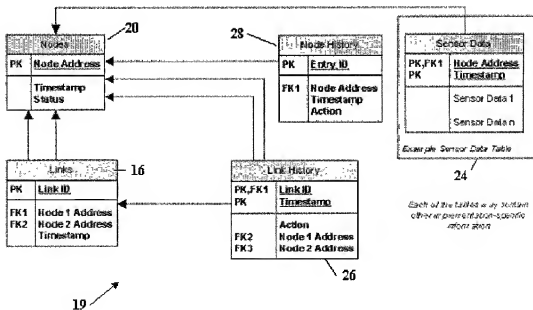
See *Mulgund* (paragraph [0005])

It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

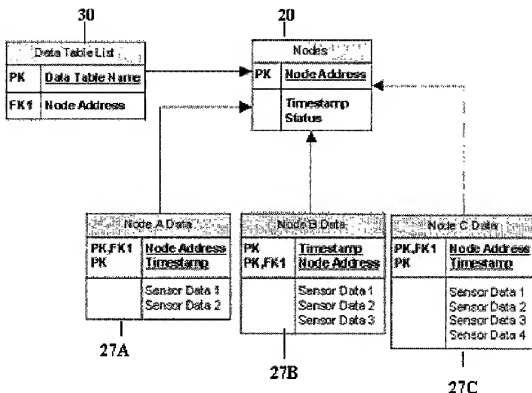
See *Mulgund* (paragraph [0025])



See *Mulgund* (Fig. 1)



See *Mulgund* (Fig. 3)



See *Mulgund* (Fig. 4)

Applicant respectfully points out that Applicant has reviewed the portions of Madden TinyDB identified by USPTO, and so far as Applicant can discern, Madden TinyDB does not recite the text of clause of Applicant's amended independent claims 1. Rather, the portions of Madden TinyDB identified by USPTO recite as follows:

TinyDB is a query processing system for extracting information from a network of TinyOS sensors. Unlike existing solutions for data processing in TinyOS, TinyDB does not require you to write embedded C code for sensors. Instead, TinyDB provides a simple, SQL-like interface to specify the data you want to extract, along with additional parameters, like the rate at which data should be refreshed – much as you would pose queries against a traditional database. Given a query specifying your data interests, TinyDB collects that data from motes in the environment, filters it, aggregates it together, and routes it out to a PC. TinyDB does this via power-efficient in-network processing algorithms.

To use TinyDB, you install its TinyOS components onto each mote in your sensor network. TinyDB provides a simple Java API for writing PC applications that query and extract data from the network; it also

comes with a simple graphical query-builder and result display that uses the API.

1. **Sensor Network Software:** This is the heart of TinyDB, although most users of the system should never have to modify this code. It runs on each mote in the network, and consists of several major pieces:

- **Sensor Catalog and Schema Manager:** The catalog is responsible for tracking the set of attributes, or types of readings (e.g. light, sound, voltage) and properties (e.g. network parent, node ID) available on each sensor. In general, this list is not identical for each sensor; networks may consist of heterogeneous collections of devices, and may be able to report different properties. (See Section 8.1 for details.)

- **Query Processor:** The main component of TinyDB consists of a small query processor.

The query processor uses the catalog to fetch the values of local attributes, receives sensor readings from neighboring nodes over the radio, combines and aggregates these values together, filters out undesired data, and outputs values to parents. (See Section 8.2 for details.)

- **Memory Manager:** TinyDB extends TinyOS with a small, handle-based dynamic memory manager. (See Section 8.3 for details.)

- **Network Topology Manager:** TinyDB manages the connectivity of motes in the network, to efficiently route data and query sub-results through the network. (See Section 8.4 for details.)

2. **Java-based Client Interface:** A network of TinyDB motes is accessed from a connected PC through the TinyDB client interface, which consists of a set of Java classes and applications.

These classes are all stored in the `tinys-1.x/tools/java/tinys/tinydb` package in the source tree. The specific classes are described in Section 7; major classes include:

- A network interface class that allows applications to inject queries and listen for results (Section 7.1.1)

- Classes to build and transmit queries (Sections 7.1.3, 7.1.5, 7.1.6)

- A class to receive and parse query results (Section 7.1.4)

- A class to extract information about the attributes and capabilities of devices (Section 7.1.7)

- A GUI to construct queries (Sections 7.2.3, 7.2.4)

- A graph and table GUI to display individual sensor results (Sections 7.2.5, 7.2.6, 7.2.7)

- A GUI to visualize dynamic network topologies (Section 7.2.8)

- An application that uses queries as an interface on top of a network of sensors (Section 7.2)

3 Quick Start: Running Queries with TinyDB

In this section, you will learn how to install TinyDB software, set up a network of TinyDB motes, inject a query into the network, and collect the results of the query.

3.1 Installation and Requirements

TinyDB requires a basic TinyOS installation, with a working Java installation (and javax.comm library). It is currently designed to work with the nesC compiler (next generation C-like language for TinyOS) and avr-gcc 3.3 . To obtain these tools, download the TinyOS 1.1 release from <http://webs.cs.berkeley.edu/tos>

Click on the link for your platform (PC Linux or Windows), and follow the installation instructions.

The most recent version of TinyDB is always available from the TinyOS SourceForge repository; see the TinyOS CVS Page for instructions on using CVS. In addition to the standard TinyOS distribution, TinyDB includes a number of additional files detailed in Appendix A of this document.

The following table summarizes the software requirements of TinyDB:

Required Software Notes

avr-gcc Version 3.3 or later

Java SDK Version 1.4 or later

nesC compiler From the TinyOS 1.1 release

javax.comm tools Version 1.3 or later, from IBM

TinyOS From SourceForge CVS

To verify that your installation is working properly, do the following:

1. Compile and install TinyDB on the mote. To do this, connect the mote to the programming

board, then type the following:

- cd tinyos-1.x/apps/TinyDBApp/
- make mica
- make mica install

If this fails, verify that your installation works (see the instructions on the web site), and that you have all of the TinyDB files listed above.

2. Compile and run the TinyDBMain java classes. To do this, type the following:

- cd tinyos-1.x/tools/java/net/tinyos/tinydb
- make
- cd tinyos-1.x/tools/java
- java net.tinyos.tinydb.TinyDBMain

You'll need to make sure you have the following jar files in your classpath (they should all be available in tinyos-1.x/tools/java/jars): (Madden TinyDB, page 5 introduction, System Overview page 7, and page 8).

Applicant respectfully points out that Applicant has reviewed the portions of Madden TAG identified by USPTO in claim 1, and so far as Applicant can discern,

Madden TAG does not recite the text of clause of Applicant's original independent claim 1. Rather, the portions of Madden TAG identified by USPTO recite as follows:

We present the Tiny AGgregation (TAG) service for aggregation in TinyOS. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various generic properties of aggregates, and show how those properties affect the performance of our in-network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault-tolerance of the basic solution.

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggybacking on the existing ad hoc networking protocol. Sensors route data back towards the user through a routing tree rooted at the basestation. As data flows up this tree, it is aggregated according to an aggregation function and value-based partitioning specified in the query. For example, consider the problem of counting the number of nodes in a network of indeterminate size. First, the request to count is injected into the network. Then, each leaf node in the tree reports a count of 1 to their parent; interior nodes sum the count of their children, add 1 to it, and report that value to their parent. Counts propagate up the tree in this manner, and flow out at the root.

Given the simple routing protocol from Section 2.1 and our SQL-like query model, we now discuss the implementation of the core TAG algorithm for in-network aggregation.

A naive implementation of sensor network aggregation would be to use a centralized, server-based approach where all sensor readings are sent to the base station, which then computes the aggregates. In TAG, however, we compute aggregates in-network whenever possible, because, if properly implemented, this approach can be lower in number of message transmissions, latency, and power consumption than the server-based approach. We will measure the advantage of in-network aggregation in Section 5 below; first, we present the basic algorithm in detail. We first consider the operation of the basic approach in the absence of grouping; we show how to extend it with grouping in Section 4.2.

4.1 Tiny Aggregation

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where the aggregate values are continually routed up from children to parents. Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all sensors in the network during that epoch.

Given our goal of using as few messages as possible, the collection phase must insure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children

are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

4.2 Grouping

Grouping in TAG is functionally equivalent to the GROUP BY clause in SQL: each sensor reading is placed into exactly one group, and groups are partitioned according to an expression over one or more attributes. The basic grouping technique is to push the expression down with the query, ask sensors to choose the group they belong to, and then, as answers flow back, update aggregate values in the appropriate groups.

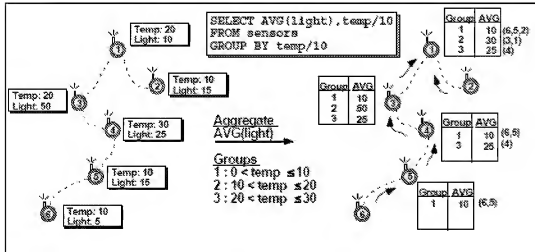
Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a sensor is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a sensor receives an aggregate from a child, it checks the group id. If the child is in the same group as the sensor, it combines the two values using the combining function. If it is in a different group, it stores the value of the child's group along with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the sensor updates the appropriate aggregate. During the next epoch, the sensor will send out the value of all the groups it collected information about during the previous interval, combining information about multiple groups into a single message as long as the message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

Recall that queries can also contain a HAVING clause, which constrains the set of groups in the final query result. We sometimes pass this predicate into the network along with the grouping expression. The predicate is only sent into the network if it can potentially be used to reduce the number of messages that must be sent: for example, if the predicate is of the form $\text{MAX}(\text{attr}) < x$, then information about groups with $\text{MAX}(\text{attr}) > x$ need not be transmitted up the tree, and so the predicate is sent down into the network. When a node detects that a group does not satisfy a HAVING clause, it can notify other nodes in the network of this information to suppress transmission and storage of values from that group. Note that HAVING clauses can be pushed down only for monotonic aggregates; non-monotonic aggregates are not amenable to this technique. However, not all HAVING predicates on monotonic aggregates can be pushed down; for example, $\text{MAX}(\text{attr}) > x$, cannot be applied in the network because a node cannot know that, just because its local value of x is less than the MAX over the entire group is less than x .

Because the number of groups can exceed available storage on any one (non-leaf) sensor, a way to evict groups is needed. Once an eviction victim is selected, it is forwarded to the sensor's parent, which may choose to hold on to the group or continue to forward it up the tree. Notice that a single sensor may evict several groups in a single epoch (or the same group multiple times, if a bad victim is selected). This is because, once group storage is full, if only one group is evicted at a time, a new eviction decision must be made every time a value

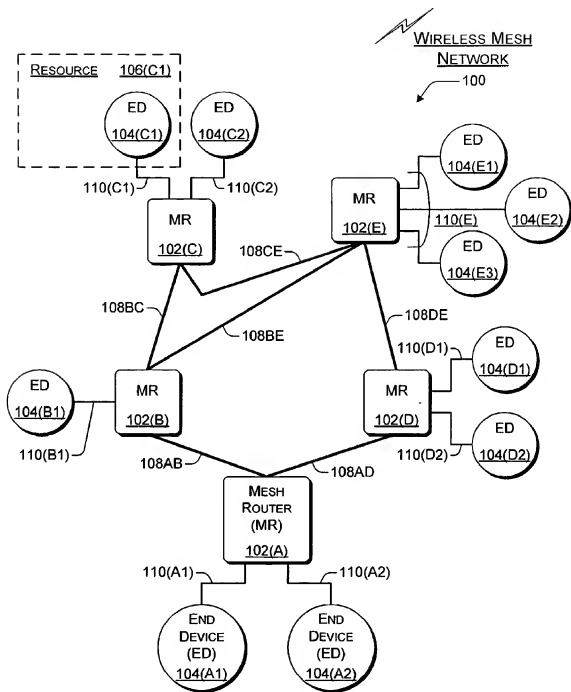
representing an unknown or previously evicted group arrives. Because groups can be evicted, the base station at the top of the network may be called upon to combine partial groups to form an accurate aggregate value. Evicting partially computed groups is known as partial preaggregation, as described in [11].

Thus, we have shown how to partition sensor readings into a number of groups and properly compute aggregates over those groups, even when the amount of group information exceeds available storage in any one sensor. We will discuss experiments with grouping and group eviction policies in Section 5.2. First, we summarize some of the additional benefits of TAG.

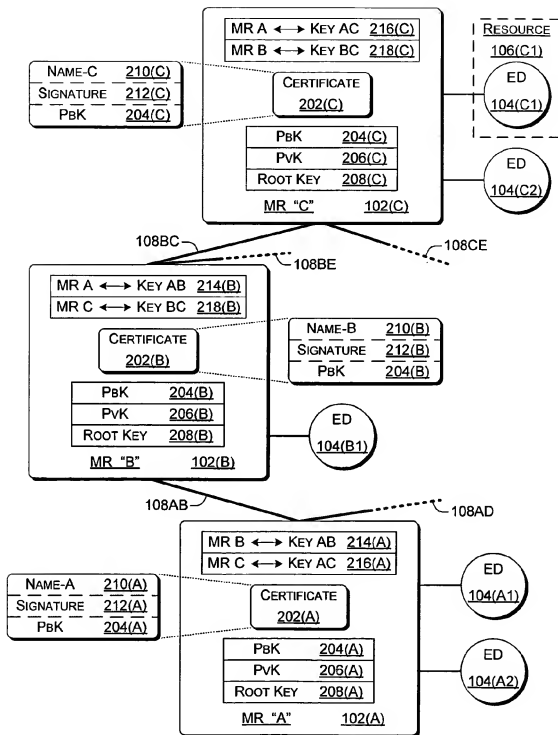


See *Madden TAG* (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2)

Applicant respectfully points out that Applicant has reviewed the portions of Simon identified by USPTO, and so far as Applicant can discern, Simon does not recite the text of clause of Applicant's amended independent claim 1. Rather, the portions of Simon identified by USPTO recite as follows:



799.1



779.2

In an exemplary method implementation, a method includes: designating a neighborhood administrator; receiving notification of a delinquent router from the

designated neighborhood administrator; and excluding the delinquent router responsive to the notification. In an exemplary mesh router implementation, a mesh router is capable of establishing a wireless mesh network with other mesh routers, the mesh router is further capable of designating a neighborhood administrator mesh router; and the mesh router is adapted to exclude another mesh router that is associated with a particular certificate when the particular certificate has been identified as delinquent by the designated neighborhood administrator mesh router.

Although each mesh router 102 is illustrated as being in wireless communication with from one to three end devices 104, each may alternatively be in communication with any number of end devices 104. Mesh router 102(A) is in wireless communication with two end devices 104(A1) and 104(A2) over wireless links 110(A1) and 110(A2), respectively. Mesh router 102(B) is in wireless communication with one end device 104(B1) over wireless link 110(B1). Mesh router 102 (C) is in wireless communication with two end devices 104 (C1) and 104(C2) over wireless links 110(C1) and 110(C2), respectively. Similarly, mesh router 102(E) has wireless links 110(E) with three end devices 104(E1), 104(E2), and 104 (E3). Mesh router 102(D) has wireless links 110(D1) and 110(D2) to two end devices 104(D1) and 104(D2), respectively.

FIG. 2 illustrates an exemplary public key infrastructure (PKI) at the mesh router tier in which each mesh router 102 is associated with a certificate 202. Three exemplary mesh routers 102(A), 102(B), and 102(C) are specifically shown. As illustrated, each mesh router 102 includes a certificate 202, a public key (PbK) 204, a private key (PvK) 206, and a root key 208. Each certificate 202 includes a name 210, a signature 212, and the corresponding public key 204. Mesh router "A" 102(A) is used in particular to describe these general aspects of the exemplary PKI at the mesh router tier.

See *Simon* (Figs. 1 and 2; Abstract, col. 3 lines 4-18; col. 4 lines 23-32)

Applicant respectfully points out that Applicant has reviewed the portions of *Levis* identified by USPTO, and so far as Applicant can discern, *Levis* does not recite the text of clause of Applicant's amended independent claim 1. Rather, the portions of *Levis* identified by USPTO recite as follows:

Composed of tens of thousands of tiny devices with very limited resources ("motes"), sensor networks are subject to novel systems problems and constraints. The large number of motes in a sensor network means that there will often be some failing nodes; networks must be easy to repopulate. Often there is no feasible method to recharge motes, so energy is a precious resource. Once deployed, a network must be reprogrammable although physically unreachable, and this reprogramming can be a significant energy cost.

We present *Mate*, a tiny communication-centric virtual machine designed for sensor networks. *Mate*'s high-level interface allows complex

programs to be very short (under 100 bytes), reducing the energy cost of transmitting new programs. Code is broken up into small capsules of 24 instructions, which can self-replicate through the network. Packet sending and reception capsules enable the deployment of ad-hoc routing and data aggregation algorithms. Mate's concise, high-level program representation simplifies programming and allows large networks to be frequently reprogrammed in an energy-efficient manner; in addition, its safe execution environment suggests a use of virtual machines to provide the user/kernel boundary on motes that have no hardware protection mechanisms.

A capsule sent in a packet contains a type (subroutines 0-3, clock, receive, send) and a version number. If Mate receives a more recent version of a capsule than the one of the specified type currently being used, Mate installs it. A capsule can be transmitted to other motes using the *forw* instruction, which broadcasts the issuing capsule for network neighbors to install. These motes will then issue *forw* when they execute the capsule, forwarding the capsule to their local neighbors. Because of the version information, motes with the new code will ignore older capsules they receive. Over time, the new code will disseminate through the logical network like a virus {all one needs to do is install it on a single mote and execute the capsule. Correspondingly, for a mote to be able to run a different version of the program with no threat of reprogramming, it must be in a logically separate network. Versioning is implemented as a 32 bit counter { this allows a single network to last for a very long time (centuries) even with very rapid reprogramming rates (once every few seconds).

A capsule can also forward other installed capsules with the *forwo* (forward other) instruction. This is useful if the desired program is composed of several capsules; a temporary clock capsule that forwards every capsule can be installed, then as each component capsule is installed it will be forwarded. Once the entire network has installed all of these capsules, the clock capsule can be replaced with a program to drive the application.

See *Levis* (Abstract and Section 4.4 code infection)

The USPTO has characterized *Levis* to “teach” at least some of the text of amended Independent Claim 1, but cannot support its characterization with objectively verifiable evidence. The USPTO has therefore cannot met its burden to establish a *prima facie* case of unpatentability for amended Independent Claim 1. What a reference

“teaches” is a question of fact.^{6,7,8} Conclusory statements that a reference “teaches” something beyond its bare recitations/direct disclosure do not constitute ANY evidence of such “teachings” unless they are supported by objective evidence. See *In re McNeil-PPC*, 2008-1546 (Fed. Cir. July 31, 2009);⁹ *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002);¹⁰ *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000) (“Whether the Board relies on an

⁶ See *Rapoport v. Dement*, 254 F.3d 1053, 1060 (Fed. Cir. 2001) (“What a reference teaches is a question of fact... Therefore, we review the Board’s characterization of the disclosure in the FPR Publication for substantial evidence.”) (emphasis added).

⁷ *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993) (reversing the PTO and holding when the PTO presented no evidence to cure *prima facie* differences between patent claim and USPTO assertions regarding what the allegedly invalidating prior art “taught”)

⁸ Anticipation, as well as what a reference teaches, is a question of fact. *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1323 (Fed. Cir. 2002).

⁹ In *McNeil*, the USPTO had rejected claims reciting a tampon having “a generally cylindrical compressed, solid fibre core” and ribs “compressed less than the fiber core” in view of a Japanese patent application (“Sasaki”). *McNeil* appealed to the Board of Patent Appeals and Interferences, which “specifically found that ‘Sasaki reasonably appears to depict a tampon having a generally cylindrical absorbent portion with a generally cylindrical compressed solid fiber core from which longitudinal ribs extend radially outward.’” See *id.*, 2008-1546, slip op. 1, 3 (Fed. Cir. July 31, 2009). In light of this and its finding that of each rib of Sasaki being “compressed less than the fiber core,” the Board affirmed the rejections. Insofar that the Sasaki reference did not directly disclose/recite as alleged by the Board, and since the Board did not supply evidence supporting its statement that “Sasaki reasonably appears to depict a tampon having a generally cylindrical absorbent portion with a generally cylindrical compressed solid fiber core from which longitudinal ribs extend radially outward,” the Federal Circuit reversed the rejection for lack of “substantial evidentiary support,” stating as follows:

There is not substantial evidence, indeed, no evidence, that Sasaki discloses ribs “compressed less than the fiber core” or “a generally cylindrical compressed, solid fibre core.” ... Just as the Sasaki figures do not indicate the relative compression of the different portions of the tampon, the Sasaki figures completely lack any indication of the relative coarseness of different portions. ... Lastly, turning to the issue of spacing of the ribs, Figure 8 shows a space between the bottommost ribs, and there is arguably some space shown between other ribs. However, because it is neither clear that Sasaki discloses a core nor which portions of Sasaki’s tampon the Board considered to be the ribs and which the Board considered to be the core, we cannot say that substantial evidence supports the Board’s determination that Sasaki discloses ribs separated from each other “at the proximal end by an amount greater than” than at “the distal end.”

See *id.*, 2008-1546, slip op. 1, 10-11 (Fed. Cir. July 31, 2009).

¹⁰ In *Lee*, the USPTO argued that, to the “common sense of a person of ordinary skill in the art,” it was obvious that one could combine a prior patent for an on-screen television menu with an on-screen picture-quality adjustment for a video game played on a television illustrated in the game’s handbook. The Federal Circuit ruled that obviousness must be based on “objective evidence of record.” Finding no specific published suggestion in the record, the Federal Circuit ruled the invention patentable. See *id.*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (describing the BPAI’s obligation to develop an evidentiary basis for its factual findings to allow for meaningful judicial review under the substantial evidence standard).

express or an implicit showing, it must provide particular findings related thereto. ... Broad conclusory statements standing alone are not “evidence.”¹¹ Even if the PTO personnel were to seek to support their characterizations with an expert witness affidavit, the law is that conclusory statements by an expert that a reference “teaches” something beyond its bare recitations/direct disclosure does not constitute ANY evidence of such “teachings” unless they are supported by objective documentary evidence.¹² Thus, when a party to a matter asserts that a reference “teaches” something beyond its bare recitations/direct disclosure, and that factual assertion is challenged by an opposite party, the law requires that the asserting party provide objective evidentiary support to “close

¹¹ In *Kotzab*, the Federal Circuit reversed the BPAI as follows:

The USPTO cites Evans for teaching that “one *system* constructed and operated according to the invention may be used to control a number of valves.” Evans application, p. 19, ll. 6-8 (emphasis added). In view of this disclosure only, the USPTO concluded that Evans teaches the use of one *sensor* to control a number of valves. This conclusion must necessarily rest on the unstated premise by the USPTO that “one system” is equal to “one sensor.”

But the Board’s decision, adopting the USPTO’s premise, lacks the necessary substantial evidence to support a rejection of Kotzab’s claims. Specifically, there is not substantial evidence to show that “one system” is the same thing as “one sensor.” The words “sensor” and “probe” are used throughout Evans to refer to the device that measures the mold temperature. ... Evans clearly never uses the term “system” as a substitute for the simple temperature measuring device it calls “sensor.” And, the Board made no reference to any evidence in the record that would equate “one system” with “one sensor.”

As mentioned previously, more than a mere scintilla of evidence is necessary to support the Board’s implicit conclusion that “one system” is equal to “one sensor.” Based on the entirety of Evans’ disclosure, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support the conclusion that “one system” means “one sensor.”

See id., 217 F.3d 1365, 1370-71 (Fed. Cir. 2000) (underline added).

¹² *See Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1473 (Fed. Cir. 1997) (“The district court’s holding misapprehends the rigors of anticipation. For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art... Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there. An expert’s conclusory testimony, unsupported by the documentary evidence, cannot supplant the requirement of anticipatory disclosure in the prior art reference itself.”) (emphasis added); *see also Genzyme Corp. v. Atrium Med. Corp.*, 315 F. Supp. 2d 552, 563 (D. Del. 2004) (“For a patent to be anticipated, every element of a patent claim must appear in a single reference. Other references and opinion may be used to reveal what the reference would have meant to those skilled in the art at the time of the invention.... For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art. Presumed knowledge of one skilled in the art does not allow an expert to read into the reference elements that are not there.”) (emphasis added)

the gap” between what the reference recites and the what the asserting party *alleges* the reference teaches; in the absence of such evidence, there should be no finding of fact in favor of the asserted teaching.^{13,14,15,16} For each instance below in which the USPTO has made an unsupported characterization, Applicant accordingly requests that the USPTO either (1) withdraw the corresponding claim rejection or (2) provide an affidavit setting forth objectively verifiable evidence sufficient to “close the gap” between the characterization and what the reference actually recites.

As can be seen from the foregoing, for example, the USPTO-identified portions of Simon and Madden TAG do not recite the text of at least Clause [a] of Independent Claim 1: “aggregating at least a part of one or more mote-addressed content indexes from a first set of motes, administered by a first network administrator, and owned or controlled by a first business entity to form a first aggregated mote-addressed content index, said aggregating at least a part of one or more mote-addressed content indexes from a first set of motes further comprising: transferring a multi-mote index creation agent, which aggregates at least a part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes, the transferred multi-mote index creation agent including instructions 1) for

¹³ See *Rapoport v. Dement*, 254 F.3d 1053, 1060 (Fed. Cir. 2001) . In *Rapoport*, the Federal Circuit affirmed the Board’s holding that a publication did not anticipate a claim, reasoning as follows (emphasis added):

Having construed the disputed term in the interference count and affirmed the Board’s interpretation, we can properly address the merits of Rapoport’s anticipation argument. The Board found that the disclosure of the FPR Publication was limited to treatment of anxiety in patients suffering from sleep apnea with buspirone, and did not address treatment of the underlying sleep apnea disorder. What a reference teaches is a question of fact.... There is no disclosure in the FPR Publication of tests in which buspirone is administered to patients suffering from sleep apnea with the intent to cure the underlying condition.... The Board also correctly found that the FPR Publication does not show administering buspirone in any specific amounts to patients suffering from sleep apnea.... We note that there is no mention in the FPR Publication of administering buspirone to a patient at bedtime.... Therefore, for all the reasons stated above, we find that the Board’s conclusion that the FPR Publication does not disclose administration of buspirone to patients suffering from sleep apnea to treat sleep apnea is supported by substantial evidence.

¹⁴ See *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993) (reversing PTO and holding, when PTO presented no evidence to cure *prima facie* differences between patent claim and USPTO assertions regarding what the allegedly invalidating prior art “taught”).

¹⁵ See *In re McNeil-PPC*, 2008-1546 (Fed. Cir. July 31, 2009).

¹⁶ See *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000).

installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote.”¹⁷

To Applicant, it appears that the USPTO has tried to equate the teaching of the Levis reference and the structure of amended claim 1 (incorporating the recitations claim 16). The Levis reference recites that “A capsule sent in a packet contains a type (subroutines 0-3, clock, receive, send) and a version number. If Mate receives a more recent version of a capsule than the one of the specified type currently being used, Matte installs it.” (Levis, see section 4.4 Code Infection).” The structure of clause [a] of amended claim 1 recites “[a] said aggregating at least a part of one or more mote-addressed content indexes from a first set of motes further comprising: transferring a multi-mote index creation agent, which aggregates at least a part of one or more mote-addressed content indexes received from a first mote of the first set of motes, to a second mote of the first set of motes, the **transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote.**” (Emphasis Added) This record evidence in the Levis reference fails to equate to Levis teaching or suggesting that “transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote.”

To Applicant, it appears that the USPTO has tried to close a significant gap between the amended clause [a] and the actual recitations of the Mulgund, MaddenDB, Simon and Levis reference as shown above as the USPTO-identified portions of the Mulgund, MaddenDB, Simon and Levis References do not recite the text of at least amended Clause [a] of Independent Claim 1: “the transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second

¹⁷ Neither do the USPTO-identified portions of Levis recite “) transferring at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity,” as recited in Clause [b].

mote.”Applicant has shown by direct quotations that Independent Claim 1 and the USPTO-cited Mulgund, Madden TinyDB, Simon and Levis references are very different on their faces. *See supra* (quotation of Claim 1); (quotation of Mulgund), (quotation of Madden Tiny DB), (quotation of Simon) and (quotation of Levis). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the USPTO-cited art is very different from Claim 1, and Applicant has noted that USPTO has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 1 either under the MPEP or under controlling legal standards.

Accordingly, insofar as that Mulgund, Madden Tiny DB, Simon and Levis do not recite the text of at least Clause [a] of Applicant’s Independent Claim 1, and insofar as that USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund, Madden Tiny DB, Simon and Levis could be modified/combined to teach at least Clause [a] of amended Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks USPTO to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

With respect to USPTO assertions regarding the teachings of Mulgund, Madden Tiny DB, Simon and Levis, Applicant demonstrated above that the express recitations of Mulgund, Madden Tiny DB, Simon and Levis are not as USPTO alleges, and that USPTO has provided no evidence—to support USPTO assertions as to the factual conclusion as to what Mulgund, Madden Tiny DB, Simon and Levis “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, USPTO has presented no evidence that Mulgund, Madden Tiny DB, Simon and Levis teaches as asserted by USPTO. In addition, Applicant respectfully points out that even if USPTO’s assertions regarding the teachings of Mulgund, Madden Tiny DB, Simon and Levis were supported, such would be of no moment in that USPTO has yet to connect the alleged

teaching of Mulgund, Madden Tiny DB, Simon and Levis to the actual express language of Applicant's Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

(3) The USPTO Characterization/Assertion Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability

Given that Applicant has shown, above, what Levis actually recites, the question thus naturally arises as to how the USPTO could see Levis as “teaching” something related to Clause [a] and/or Clause [b] of Independent Claim 1. Applicant respectfully points out that the Applicant's Application is the only objectively verifiable USPTO-cited document of record that shows or suggests what the USPTO purports the references to teach. From this and the express recitations of Levis as set forth, it follows that the USPTO would be interpreting Levis through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, any USPTO assertions regarding Levis as “teaching” something related to Clause [a] and/or Clause [b] of Independent Claim 1 are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that the USPTO hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

As the USPTO has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of the USPTO assertions regarding what the technical material cited by the USPTO “teaches,” Applicant infers that the USPTO is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if the USPTO desires to maintain the rejection, in

the next communication, Applicant respectfully requests that the USPTO provide an affidavit or declaration setting forth objectively verifiable evidence in support of the USPTO's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." See, e.g., MPEP § 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

.....

(4) The USPTO is Characterizing/Asserting the Cited Art to "Teach" the Text of Independent Claim 1 Despite Contrary Evidence, Therefore the USPTO Has Not Met Its Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 1

As set forth supra, the MPEP states as follows: "the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant. . . . If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." MPEP § 2107 (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)); *In Re Glaug*, 283 F.3d 1335, 62 USPQ2d 1151 (Fed. Cir. 2002) ("During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). If the USPTO fails to meet this burden, then the applicant is entitled to the patent."). This initial burden is a cornerstone of examination principles and, as such, the Board ensures on appeal that a *prima facie* case for the unpatentability of Applicant's claims has been established *without any deference to the USPTO*. *Ex Parte Frye*, Appeal 2009-006013, pp. 9-10 (BPAI 2010) ("an applicant can overcome a rejection by showing insufficient evidence of *prima facie* [unpatentability] ... the Board reviews the particular

finding(s) contested by an appellant *anew*.”) (emphasis added). Accordingly, unless and until the USPTO presents evidence establishing *prima facie* unpatentability, an applicant is entitled to a patent on all claims presented for examination.

In attempting to establish a *prima facie* case of unpatentability, the USPTO must consider any evidence produced by Applicant. 37 CFR 1.132; *United States v. Adams*, 383 U.S. 39, 148 USPQ 479 (1966) (Great reliance must be placed on this type of evidence). Importantly, the production of such evidence by Applicant is not an admission that the USPTO has established a *prima facie* case of unpatentability, nor is it a rebuttal to any establishment of a *prima facie* case. Rather, the USPTO retains the burden of establishing a *prima facie* case in light of and while considering any evidence produced by Applicant. MPEP 716.01(a) (“Affidavits or declarations, when timely presented, containing evidence of criticality or unexpected results, commercial success, long-felt but unsolved needs, failure of others, skepticism of experts, etc., *must be considered by the examiner in determining the issue of [unpatentability, e.g.,] obviousness of claims for patentability under 35 U.S.C. [e.g.,] 103.*”) (emphasis added); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538, 218 USPQ 871, 879 (Fed. Cir. 1983) (“*evidence rising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness.*”) (emphasis added); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); *In re Palmer*, 451 F.2d 1100, 172 USPQ 126 (CCPA 1971); *In re Fielder*, 471 F.2d 640, 176 USPQ 300 (CCPA 1973); *In re Margolis*, 785 F.2d 1029, 228 USPQ 940 (Fed. Cir. 1986). Moreover, lack of objective evidence or any finding of that the evidenced produced by Applicant is unconvincing or irrelevant does not weigh in favor of unpatentability (e.g., obviousness). *Miles Labs, Inc. v. Shandon Inc.*, 997 F.2d 870, 878, 27 USPQ2d 1123, 1129 (Fed. Cir. 1993), *cert. denied*, 127 L. Ed. 232 (1994) (*The lack of objective evidence supporting patentability does not weigh in favor of unpatentability*).

Accordingly, in addition to the foregoing arguments, Applicant respectfully produces objective evidence by way of declaration submitted contemporaneously herewith for consideration by the USPTO. In light of the evidence submitted, Applicant

maintains that the USPTO has not established a *prima facie* case for the unpatentability of any of Applicant's Claims.¹⁸

If, after evaluating the produced evidence, the USPTO continues to assert the unpatentability of Applicant's Claims, Applicant respectfully requests that in the next Office Action, as required by the MPEP, the USPTO render a statement to that effect along with (1) specifying the reasons for which the supplied objective evidence is deemed unpersuasive and (2) independently establishing a *prima facie* case for the unpatentability of each of Applicant's Claims without any consideration of or influence by the supplied objective evidence.¹⁹ MPEP 716.01(d) ("If, after evaluating the evidence, the examiner still asserts that the claimed invention is unpatentable, the next Office action should include a statement to that effect and identify the reason(s)."); *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 7 USPQ2d 1222 (Fed. Cir.), *cert. denied*, 488 U.S. 956 (1988).

Consequently, under the MPEP standards as set forth above there can be no teaching to modify/combine the cited references to meet the recitations of Applicant's Claims as a matter of law. Accordingly, in light of the MPEP standards for patentability, Applicant respectfully requests that the USPTO hold amended claim 1 and each of Applicant's Claims patentable and issue a Notice of Allowance of the same for at least the foregoing reasons.

2. Dependent Claims 2-15: Patentable for at Least Reasons of Dependency from Independent Claim 1.

Claims 2-15 depend either directly or indirectly from Independent Claim 1. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4.

¹⁸ See attached Declaration of expert.

¹⁹ The USPTO is respectfully reminded that unpersuasive objective evidence does not weigh in favor of a finding of obviousness. *See Miles Labs. Inc. v. Shandon Inc.*, 997 F.2d 870, 878, 27 USPQ2d 1123, 1129 (Fed. Cir. 1993), *cert. denied*, 127 L. Ed. 232 (1994) (*The lack of objective evidence of nonobviousness does not weigh in favor of obviousness*).

Consequently, Dependent Claims 2-15 are patentable for at least the reasons why Independent Claim 1 is patentable. Accordingly, Applicant respectfully requests that USPTO hold Dependent Claims 2-15 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

3. Dependent Claim 3 is Independently Patentable

Irrespective of the arguments discussed above, Claim 3 is independently patentable. Dependent claim 3 as amended recites:

3. The method of Claim 1, wherein said (a) aggregating at least the part of one or more mote-addressed content indexes from the first set of motes administered by the first network administrator owned or controlled by the first business entity to form a first aggregated mote-addressed content index further comprises:
- aggregating, at least a part of one or more mote-addressed content indexes from the first set of motes, the content indexes comprising information indicating a first type of sensing or control capabilities associated with the first set of motes and a second type of sensing or control capabilities associated with the first set of motes; and
 - creating one or more multi-mote content indexes of the first set of motes.
- (Emphasis Added)

With reference to Claim 3, USPTO has stated as follows:

“As to claim 3, Mulgund teaches:
aggregating at least a part of one or more mote-addressed content indexes from the first set of motes, as discussed per claim 1, the content indexes comprising information indicating a first type of sensing or control capabilities associated with the first set of motes [indexing information of Mulgund includes node's unique address, wherein it is known a priori what type of output a particular node provides. Each Node Data Table contains node's unique address, which identifies a sensing function of that node] and a second type of sensing or control capabilities associated with the first set of motes [different nodes in the set have different sensors installed and thus provide different amount and type of data output] (par. [0029], [0042]); and
creating one or more multi-mote content indexes of the first set of motes (Fig. 4, par. [0042]).

Examiner's Office Action, p. 14-15 (3 November 2010).

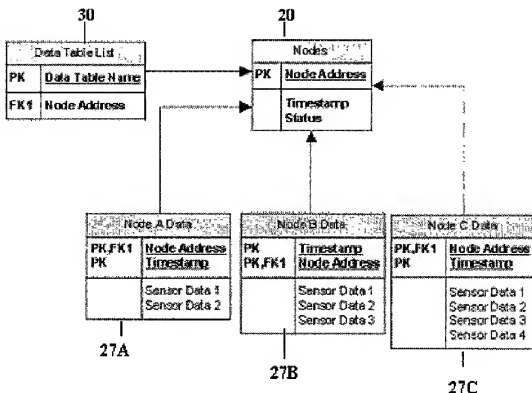
Applicant respectfully points out that Applicant has reviewed the Mulgund and Madden reference identified by USPTO, and so far as Applicant can discern, Mulgund does not recite “the content indexes comprising information indicating a first type of sensing or control capabilities associated with the first set of motes and a second type of sensing or control capabilities associated with the first set of motes”.²⁰ (Emphasis added) Instead, Mulgund recites:

“the structure and nature of the sensor(s) output data is known a priori or it can be retrieved by interrogating the node with which the sensor(s) are associated;”

“In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.”

See *Mulgund* (paragraphs [0029] and [0042])

²⁰ See 35 U.S.C. § 112 paragraph 4 (“A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.”). Claim 3 literally recites Clause [a] and is construed to incorporate all of Claim 1, including Clause [a].



See Mulgund (Fig. 4)

We present the Tiny AGgregation (TAG) service for aggregation in low-power, distributed, wireless environments. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various generic properties of aggregates, and show how those properties affect the performance of our in-network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault tolerance of the basic solution.

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggy backing on the existing ad hoc networking protocol.

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where the aggregate values are continually routed up from children to parents. Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all devices in the network during that epoch.

Given our goal of using as few messages as possible, the collection phase must ensure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a node is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a node receives an aggregate from a child, it checks the group id. If the child is in the same group as the node, it combines the two values using the combining function.

If it is in a different group, it stores the value of the child's group along with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the node updates the appropriate aggregate. During the next epoch, the node sends the value of all the groups about which it collected information during the previous epoch, combining information about multiple groups into a single message as long as message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

See Madden (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2)

It appears to Applicant that under the broadest reasonable interpretation that “the content indexes comprising information indicating a first type of sensing or control capabilities associated with the first set of nodes and a second type of sensing or control capabilities associated with the first set of nodes;” is not shown in the USPTO cited portions of the references. Consequently, on its face, Mulgund does not show the text of at least Clause [a] of Dependent Claim 3.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no proffered evidence that would support a finding of fact that Mulgund describes or teaches the text of Clause [a] of dependent Claim 3. Under the guidelines from the *MPEP* and from the case law

established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest dependent Claim 3 for at least these reasons.

Applicant has shown that on its face the evidence cited by USPTO does not establish a *prima facie* case of unpatentability with respect to Claim 3 or even to its parent claim. Applicant has shown by direct quotations that Applicant's Claims 1 and 3 and the USPTO-cited Mulgund reference are very different on their faces. *See supra* (quotation of Dependent Claim 3 and its parent claim); (quotation of Mulgund); and (quotation of Madden). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the USPTO-cited art is very different from Dependent Claim 3 and its parent claim, and Applicant has noted that USPTO has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Dependent Claim 3 and its parent claim either under the MPEP or under controlling legal standards.

Accordingly, and insofar as that USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [a] of Dependent Claim 3, Applicant respectfully points out that under the MPEP guidelines as set forth above, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Dependent Claim 3 for at least these reasons. Thus, Applicant respectfully asks USPTO to hold Dependent Claim 3 allowable and to issue a Notice of Allowability of same.

With respect to USPTO assertions regarding the teachings of Mulgund and Madden, Applicant demonstrated above that the express recitations of Mulgund and Madden are not as USPTO alleges, and that USPTO has provided no evidence—let alone the preponderance of the evidence required—to support USPTO assertions as to the factual conclusion as to what Mulgund and Madden “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, USPTO has presented no evidence that Mulgund and Madden teaches as asserted by USPTO. In addition, Applicant

respectfully points out that even if USPTO's assertions regarding the teachings of Mulgund and Madden were supported, such would be of no moment in that USPTO has yet to connect the alleged teaching of Mulgund and Madden to the actual express language of Applicant's dependent Claim 3. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold dependent Claim 3 and its parent claim allowable and issue a Notice of Allowability of same.

B. Technical Material Cited by USPTO (Mulgund et al. (U.S Application Number 2002/0161751), "The Design of an Acquisitional Query Processor for Sensor Networks" by Samuel Madden et. al., and Simon et al. (US Patent No. 7,665,126 B2)) Does Not Show/Suggest Recitations of Amended Independent Claim 17 and Dependent Claims 18-32 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Independent Claim 17

Amended Independent Claim 17 recites:

17. A mote comprising:

an agent to aggregate on the mote in a first set of motes at least a part of one or more mote-addressed content indexes corresponding to a first type of content from the first set of motes administered by a first network administrator and owned or controlled by a first business entity, to aggregate on the mote at least a part of one or more first mote-addressed content indexes corresponding to a second type of content from the first set of motes to form a first aggregated mote-address content index, and to transfer at least a part of the first aggregated mote-addressed content index to an aggregator that aggregates (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity, the mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality; and

means for transferring the agent to aggregate at least a part of one or more mote-addressed content indexes from the first set of motes to another mote, and said agent further comprising:

means for installing the transferred multi-mote index creation agent on the another mote; and

means for receiving, with the installed multi-mote index creation agent, at least a part of one or more mote-addressed content indexes of a second mote of the first set of motes.”

Applicant has incorporated the recitations of claim 32 into independent claim 17. As shown following, (1) the USPTO has disregarded its duty to undergo the broadest reasonable interpretation consistent with the specification of Independent Claim 32 by an ill conceived mapping onto the USPTO-cited material, which fails to recite several express recitations of these claims; (2) the USPTO is asserting one or more characterizations that each cited reference “teaches” at least some of the text of Independent Claim 32, but has not provided any objectively verifiable evidence supporting these assertions; and (3) the USPTO has failed to adduce objective evidence of how to modify/combine the cited art to match the recitations of Independent Claim 32.

Under the MPEP standards as set forth herein, USPTO has not met his burden to establish a *prima facie* case of the unpatentability of amended Independent Claim 17 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that USPTO withdraw his rejections of amended Claim 17 and Issue a Notice of Allowability for same.

a) Technical Material Cited by USPTO Does Not Recite the Text of at Least Independent Claim 17

As Applicant has incorporated the recitations of claim 32 into independent claim 17, applicant will provide arguments for claim 32. As set forth above, amended Independent Claim 17 as presented recites:

“17. A mote comprising:

[a] an agent to aggregate on the mote in a first set of motes at least a part of one or more mote-addressed content indexes corresponding to a first type of content from the first set of motes administered by a first network administrator and owned or controlled by a first business entity, to aggregate on the mote at least a part of one or more first mote-addressed content indexes corresponding to a second type of content from the first set of motes to form a first aggregated mote-address content index, and to transfer at least a part of the first aggregated mote-addressed content index to an aggregator that aggregates (i) a first-set

content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity, the mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality; and

[b] means for transferring the agent to aggregate at least a part of one or more mote-addressed content indexes from the first set of motes to another mote, and said agent further comprising:

means for installing the transferred multi-mote index creation agent on the another mote; and

means for receiving, with the installed multi-mote index creation agent, at least a part of one or more mote-addressed content indexes of a second mote of the first set of motes." (Emphasis Added)

It appears to Applicant that the USPTO has attempted to map "[b] means for transferring the agent to aggregate at least a part of one or more mote-addressed content indexes from the first set of motes to another mote, and said agent further comprising: means for installing the transferred multi-mote index creation agent on the another mote; and means for receiving, with the installed multi-mote index creation agent, at least a part of one or more mote-addressed content indexes of a second mote of the first set of motes," onto a configuration in Madden ACQP by which "We have designed and implemented an ACQP engine called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network."²¹ Applicant notes that the USPTO has not explained how it reaches such mappings under the framework of the broadest reasonable interpretation consistent with the specification as is the USPTO's burden (e.g., such as by examples drawn from

²¹ Claim 32 was rejected in view of Mulgund, Madden ACQP and Simon. The corresponding method claim 16 was rejected in view of Mulgund, Madden TinyDB, Simon and Levis. The USPTO attempted to map claim 16 on a configuration in Levis by which "A capsule sent in a packet contains a type (subroutines 0-3, clock, receive, send) and a version number. If Mate receives a more recent version of a capsule than the one of the specified type currently being used, Mate installs it." Applicant points out that this mapping does not address at least the "transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote" of amended claim 17 (incorporating the recitations of canceled claim 32).

Applicant's claims or detailed description),²² and furthermore, Applicant points out that this mapping does not address at least the “means for **transferring the agent to aggregate** at least a part of one or more **mote-addressed content indexes** from the first set of motes to another mote, and said agent further comprising: means for installing the transferred multi-mote index creation agent on the another mote; and means for receiving, with the installed multi-mote index creation agent, at least a part of one or more mote-addressed content indexes of a second mote of the first set of motes.”

In view of the foregoing, Applicant points out that although Independent Claim 17 has been quoted in the present rejection, several claim terms have not been addressed in its analysis. Because the USPTO-cited material fails to recite at least the foregoing bolded recitations of Independent Claim 17,²³ under the MPEP guidelines as set forth above, such material does not establish a *prima facie* case of the unpatentability of Independent Claim 17. For these reasons, Applicant respectfully asks the USPTO to hold Independent Claim 17 allowable and to issue a Notice of Allowability of same.

- (1) **The USPTO is Characterizing/Asserting U.S. Pub. No. 2002/0161751 A1 (“Mulgund”) and/or “The Design of an Acquisitional Query Processor for Sensor Networks” by Samuel Madden et. al.” (“Madden ACQP”) and/or U.S. Pat. No. 7,665,126 (“Simon”) to “Teach” the Text of Independent Claim 17, But Does Not Support Its Characterization/Assertion, Therefore the USPTO Has Not Met Its Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 17:**

The USPTO has stated as follows,

²² Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the USPTO fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. See, e.g., 37 C.F.R. § 10.83 (“A practitioner should represent a client zealously within the bounds of the law.”); 37 C.F.R. § 10.84 (“[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part.”); and 37 C.F.R. § 10.76 (“A practitioner should represent a client competently.”). For these and other reasons, this document notes instances in which the USPTO did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the USPTO's behalf.

²³ Although Independent Claim 17 has been quoted in the present rejection, several claim terms have not been addressed in its analysis, as shown below.

“As to claim 17, Mulgund teaches a mote, wherein the mote comprises a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality [at least one sensing node (2) in the first set of sensing nodes (Fig. 1) comprising a computational device being a small embedded platform that has one or more sensors (16)] (par. [0026]); an agent [sensor network modeling agent (14)] (Fig. 1) to aggregate in a first set of motes at least a part of one or more mote-addressed content indexes corresponding to a first type of content of content [type of data output provided by each sensor of the node] (par. [0026], [0029] in Mulgund) from the first set of motes [aggregating indexing information related to sensor data outputs stored in Sensor Data Table 24. It is well known to one of ordinary skill in the art that such indexing data allows one to distinguish between different sensor data outputs, as discussed in connection with relational databases of Figs. 3 and 4] (abstract, par. [0005] and [0025], Figs. 3 and 4) administered by a first network administrator [set of nodes at the left of Fig. 1 is administered by a first network access point], to aggregate at least a part of the one or more first mote-addressed content indexes corresponding to a second type of content from the second set of motes to form a first aggregated mote-addressed content index [as discussed per first set, wherein Mulgund teaches having two sets of motes] (Fig. 3), and to expose [make available] at least a part of the first aggregated mote-addressed content index to an aggregator [database server 10] that aggregates (i) a first-set content index from the first set of motes [nodes to the left of Fig. 1] administered by the first network administrator [first network access point to the left of Fig. 1] and (ii) a second set content index from a second set of motes [nodes to the right of Fig. 1] administered by a second network administrator [second network access point to the right of Fig. 1].

It is noted that (i) and (ii) is a non-functional descriptive material since it does not further limit either aggregating or exposing step.

Mulgund is silent as to whether the first and second network access points are owned or controlled by different business entities. Mulgund further does not teach that an agent is on the mote. Mulgund, however, teaches that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (par. [0030]), which suggests to one of ordinary skill in the pertinent art that there exists some agent resident in a mote that collects data from sensors and stores it in the local knowledge base.

Madden ACQP teaches an agent resident in a mote [a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network] (section 1 Introduction, par. 4), the agent to perform the functionality of aggregating and exposing substantially as claimed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having an agent resident in the mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, par. 4 in Madden).

Simon is directed to a method of controlling access of mesh routers to a network resources based on information contained in a certificate associated with

the particular router. See abstract. Simon teaches the first set of devices (104C) is administered by a first network administrator (102C) controlled by a first business entity [mesh router 102C is controlled by the associated certificate (202C)] and wherein the second set of devices (104B) is administered by a second network administrator (102B) controlled by a second business entity [mesh router 102B is controlled by the associated certificate (202B)] (Figs. 1 and 2; col. 3 lines 4-18; col. 4 lines 23-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden ACQP by having the first and second network access points being owned or controlled by different business entities in order to introduce control and/or accountability into spontaneously-formed wireless networks (col. 1 lines 43-45 of Simon). See Examiner's *Office Action*, p. 25-27 (3 November 2010).

Applicant respectfully disagrees and traverses the rejection.

(2) The USPTO Has Put Forth No Evidence Supporting Its Characterization/Assertion That Mulgund, Madden ACQP and/or Simon "Teaches" Recitations of Independent Claim 17

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by USPTO, and so far as Applicant can discern, Mulgund does not recite the text of clause [a] of Applicant's amended independent claim 17. Rather, the portions of Mulgund identified by USPTO recite as follows:

Method of and system for aggregating into a relational database model the state of an ad hoc network comprised of uniquely addressable distributed sensor nodes in communication using networking protocols with one another through links and to a database server through access points. A relational database logical design resident on the database server is dynamically updated with respect to the sensor network's current and historical topological information through the use of a traversal and interrogating network modeling agent. The distributed sensors nodes may be mobile, and may communicate by wired or wireless means through networking protocols such as the Internet.

See *Mulgund* (Abstract)

The tools needed to implement the vision of seamless, global access to remote information are available only in part, and not yet as an integrated package. The Applicants describe below the development of an information architecture, which is referred to in certain embodiments as *Intelemetric™*, and a method of using the architecture which make it possible to aggregate, store, process, and distributed, real-time distributed sensor data into the enterprise, and make resulting information readily available over the Internet.

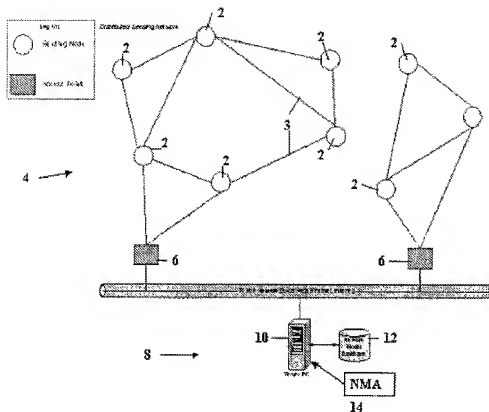
See *Mulgund* (paragraph [0005])

It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

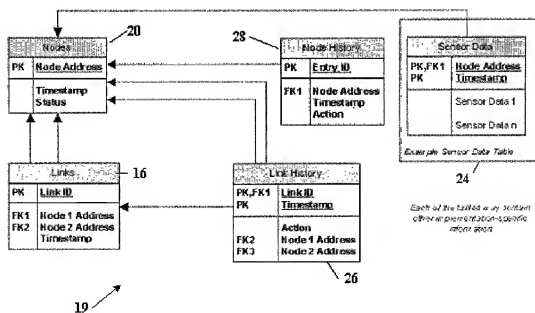
See *Mulgund* (paragraph [0025])

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

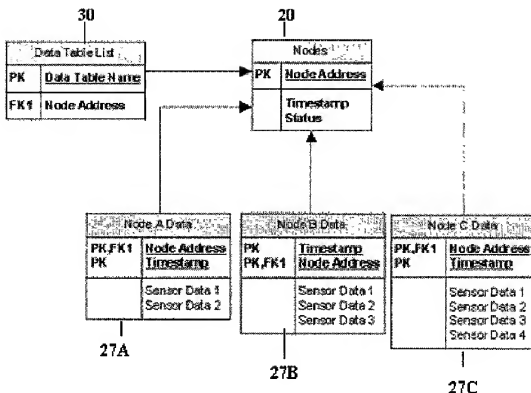
See *Mulgund* (paragraph [0026])



See *Mulgund* (Fig. 1)



See *Mulgund* (Fig. 3)



See *Mulgund* (Fig. 4)

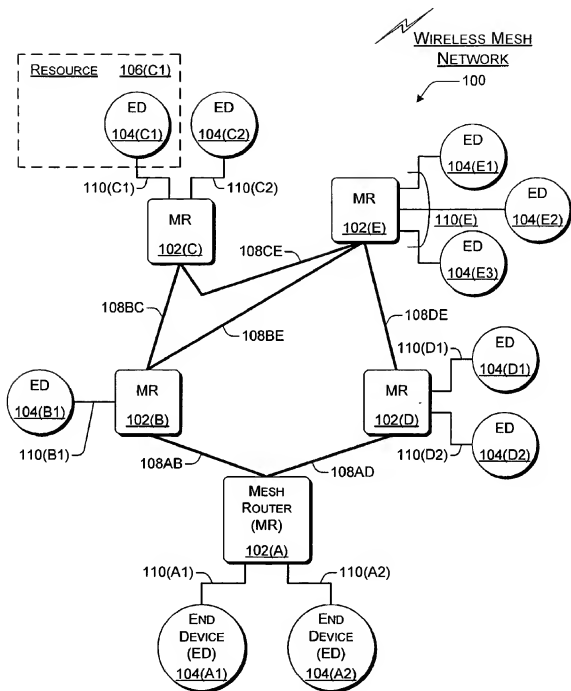
Applicant respectfully points out that Applicant has reviewed the portions of Madden ACQP identified by USPTO, and so far as Applicant can discern, Madden ACQP does not recite the text of clause of Applicant's amended independent claim 17. Rather, the portions of Madden ACQP identified by USPTO recite as follows:

"We have designed and implemented an ACQP engine called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network. TinyDB runs on the Berkeley Mica mote platform on top of the TinyOS [23] operating system. We chose this platform because the hardware is readily available from commercial sources [13] and the operating system is relatively mature. TinyDB has many of the features of a traditional query processor (e.g. the ability to select, join, project, and aggregate data), but, as we will discuss in this paper, also incorporates a number of other features designed to minimize power consumption via acquisitional techniques. These techniques taken in aggregate, can lead to orders of magnitude improvement in power consumption and increased accuracy of query results over non-acquisitional systems that do not actively control when and where data is collected."

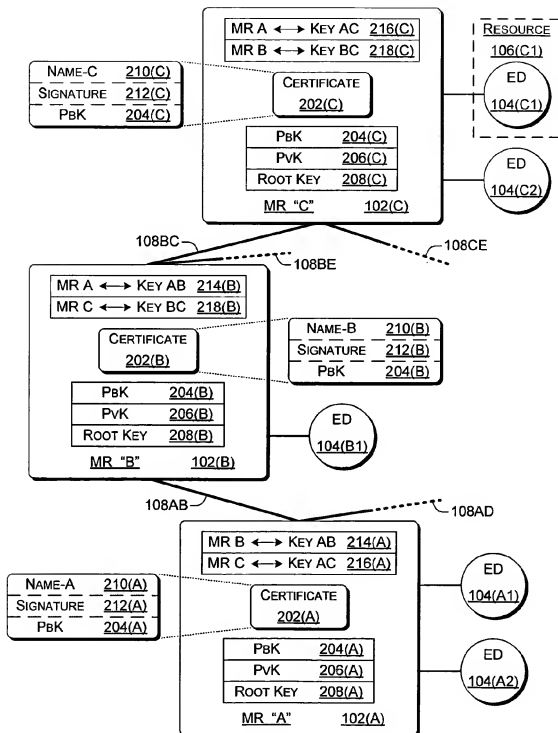
See *Madden ACQP* (section 1 Introduction, par. 4)

Applicant respectfully points out that *no portions of Simon have been identified by USPTO with respect to claim 17*, and so far as Applicant can discern, Simon does not recite the text of clause of Applicant's amended independent claim 17.

Rather, the portions of Simon identified by USPTO recite as follows:



799.1



779.2

In an exemplary method implementation, a method includes: designating a neighborhood administrator; receiving notification of a delinquent router from the

designated neighborhood administrator; and excluding the delinquent router responsive to the notification. In an exemplary mesh router implementation, a mesh router is capable of establishing a wireless mesh network with other mesh routers, the mesh router is further capable of designating a neighborhood administrator mesh router; and the mesh router is adapted to exclude another mesh router that is associated with a particular certificate when the particular certificate has been identified as delinquent by the designated neighborhood administrator mesh router.

Although each mesh router 102 is illustrated as being in wireless communication with from one to three end devices 104, each may alternatively be in communication with any number of end devices 104. Mesh router 102(A) is in wireless communication with two end devices 104(A1) and 104(A2) over wireless links 110(A1) and 110(A2), respectively. Mesh router 102(B) is in wireless communication with one end device 104(B1) over wireless link 110(B1). Mesh router 102 (C) is in wireless communication with two end devices 104 (C1) and 104(C2) over wireless links 110(C1) and 110(C2), respectively. Similarly, mesh router 102(E) has wireless links 110(E) with three end devices 104(E1), 104(E2), and 104 (E3). Mesh router 102(D) has wireless links 110(D1) and 110(D2) to two end devices 104(D1) and 104(D2), respectively.

FIG. 2 illustrates an exemplary public key infrastructure (PKI) at the mesh router tier in which each mesh router 102 is associated with a certificate 202. Three exemplary mesh routers 102(A), 102(B), and 102(C) are specifically shown. As illustrated, each mesh router 102 includes a certificate 202, a public key (PbK) 204, a private key (PvK) 206, and a root key 208. Each certificate 202 includes a name 210, a signature 212, and the corresponding public key 204. Mesh router "A" 102(A) is used in particular to describe these general aspects of the exemplary PKI at the mesh router tier.

See *Simon* (Figs. 1 and 2; Abstract, col. 3 lines 4-18; col. 4 lines 23-32)

The USPTO may characterize *Simon* to “teach” at least some of the text of amended Independent Claim 17, but cannot support its characterization with objectively verifiable evidence. The USPTO has therefore cannot met its burden to establish a *prima facie* case of unpatentability for amended Independent Claim 17. What a reference “teaches” is a question of fact.^{24,25,26} Conclusory statements that a reference “teaches”

²⁴ See *Rapoport v. Dement*, 254 F.3d 1053, 1060 (Fed. Cir. 2001) (“What a reference **teaches** is a question of fact...Therefore, we review the Board’s **characterization of the disclosure** in the FPR Publication for **substantial evidence**.”) (emphasis added).

²⁵ *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993) (reversing the PTO and holding when the PTO presented no evidence to cure *prima facie* differences between patent claim and USPTO assertions regarding what the allegedly invalidating prior art “taught”)

something beyond its bare recitations/direct disclosure do not constitute ANY evidence of such “teachings” unless they are supported by objective evidence. See *In re McNeil-PPC*, 2008-1546 (Fed. Cir. July 31, 2009);²⁷ *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002);²⁸ *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000) (“Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto. ... Broad conclusory statements standing alone are not “evidence.”).²⁹ Even if the PTO

²⁶ Anticipation, as well as what a reference teaches, is a question of fact. *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1323 (Fed. Cir. 2002).

²⁷ In *McNeil*, the USPTO had rejected claims reciting a tampon having “a generally cylindrical compressed, solid fibre core” and ribs “compressed less than the fiber core” in view of a Japanese patent application (“Sasaki”). *McNeil* appealed to the Board of Patent Appeals and Interferences, which “specifically found that ‘Sasaki reasonably appears to depict a tampon having a generally cylindrical absorbent portion with a generally cylindrical compressed solid fiber core from which longitudinal ribs extend radially outward.’” See *id.*, 2008-1546, slip op. 1, 3 (Fed. Cir. July 31, 2009). In light of this and its finding that of each rib of Sasaki being “compressed less than the fiber core,” the Board affirmed the rejections. Insofar that the Sasaki reference did not directly disclose/recite as alleged by the Board, and since the Board did not supply evidence supporting its statement that “Sasaki reasonably appears to depict a tampon having a generally cylindrical absorbent portion with a generally cylindrical compressed solid fiber core from which longitudinal ribs extend radially outward,” the Federal Circuit reversed the rejection for lack of “substantial evidentiary support,” stating as follows:

There is not substantial evidence, indeed, no evidence, that Sasaki discloses ribs “compressed less than the fiber core” or “a generally cylindrical compressed, solid fibre core.” ... Just as the Sasaki figures do not indicate the relative compression of the different portions of the tampon, the Sasaki figures completely lack any indication of the relative coarseness of different portions. ... Lastly, turning to the issue of spacing of the ribs, Figure 8 shows a space between the bottommost ribs, and there is arguably some space shown between other ribs. However, because it is neither clear that Sasaki discloses a core nor which portions of Sasaki’s tampon the Board considered to be the ribs and which the Board considered to be the core, we cannot say that substantial evidence supports the Board’s determination that Sasaki discloses ribs separated from each other “at the proximal end by an amount greater than” than at “the distal end.”

See *id.*, 2008-1546, slip op. 1, 10-11 (Fed. Cir. July 31, 2009).

²⁸ In *Lee*, the USPTO argued that, to the “common sense of a person of ordinary skill in the art,” it was obvious that one could combine a prior patent for an on-screen television menu with an on-screen picture-quality adjustment for a video game played on a television illustrated in the game’s handbook. The Federal Circuit ruled that obviousness must be based on “objective evidence of record.” Finding no specific published suggestion in the record, the Federal Circuit ruled the invention patentable. See *id.*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (describing the BPAI’s obligation to develop an evidentiary basis for its factual findings to allow for meaningful judicial review under the substantial evidence standard).

²⁹ In *Kotzab*, the Federal Circuit reversed the BPAI as follows:

The USPTO cites Evans for teaching that “one *system* constructed and operated according to the invention may be used to control a number of valves.” Evans application, p. 19, II. 6-8 (emphasis added). In view of this disclosure only, the USPTO concluded that Evans

personnel were to seek to support their characterizations with an expert witness affidavit, the law is that conclusory statements by an expert that a reference “teaches” something beyond its bare recitations/direct disclosure does not constitute ANY evidence of such “teachings” unless they are supported by objective documentary evidence.³⁰ Thus, when a party to a matter asserts that a reference “teaches” something beyond its bare recitations/direct disclosure, and that factual assertion is challenged by an opposite party, the law requires that the asserting party provide objective evidentiary support to “close the gap” between what the reference recites and the what the asserting party *alleges* the reference teaches; in the absence of such evidence, there should be no finding of fact in favor of the asserted teaching.^{31,32,33,34} For each instance below in which the USPTO has

teaches the use of one *sensor* to control a number of valves. This conclusion must necessarily rest on the unstated premise by the USPTO that “one system” is equal to “one sensor.”

But the Board's decision, adopting the USPTO's premise, lacks the necessary substantial evidence to support a rejection of Kotzab's claims. Specifically, there is not substantial evidence to show that “one system” is the same thing as “one sensor.” The words “sensor” and “probe” are used throughout Evans to refer to the device that measures the mold temperature. ... Evans clearly never uses the term “system” as a substitute for the simple temperature measuring device it calls “sensor.” And, the Board made no reference to any evidence in the record that would equate “one system” with “one sensor.”

As mentioned previously, more than a mere scintilla of evidence is necessary to support the Board's implicit conclusion that “one system” is equal to “one sensor.” Based on the entirety of Evans' disclosure, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support the conclusion that “one system” means “one sensor.”

See id., 217 F.3d 1365, 1370-71 (Fed. Cir. 2000) (underline added).

³⁰ See *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1473 (Fed. Cir. 1997) (“The district court's holding misapprehends the rigors of anticipation. For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art... Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there. An expert's conclusory testimony, unsupported by the documentary evidence, cannot supplant the requirement of anticipatory disclosure in the prior art reference itself.”) (emphasis added); see also *Genzyme Corp. v. Atrium Med. Corp.*, 315 F. Supp. 2d 552, 563 (D. Del. 2004) (“For a patent to be anticipated, every element of a patent claim must appear in a single reference. Other references and opinion may be used to reveal what the reference would have meant to those skilled in the art at the time of the invention... For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art. Presumed knowledge of one skilled in the art does not allow an expert to read into the reference elements that are not there.”) (emphasis added)

³¹ See *Rapoport v. Dement*, 254 F.3d 1053, 1060 (Fed. Cir. 2001) . In *Rapoport*, the Federal Circuit affirmed the Board's holding that a publication did not anticipate a claim, reasoning as follows (emphasis added):

made an unsupported characterization, Applicant accordingly requests that the USPTO either (1) withdraw the corresponding claim rejection or (2) provide an affidavit setting forth objectively verifiable evidence sufficient to “close the gap” between the characterization and what the reference actually recites.

As can be seen from the foregoing, the USPTO-identified portions of Mulgund, Simon and Madden ACQP do not recite the text of at least Clause [a] of Independent Claim 17: “an agent to aggregate on the mote in a first set of motes at least a part of one or more mote-addressed content indexes corresponding to a first type of content from the first set of motes administered by a first network administrator and owned or controlled by a first business entity, to aggregate on the mote at least a part of one or more first mote-addressed content indexes corresponding to a second type of content from the first set of motes to form a first aggregated mote-address content index, and **to transfer at least a part of the first aggregated mote-addressed content index** to an aggregator that aggregates (i) **a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity** and (ii) **a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity.**” (Emphasis Added)

Having construed the disputed term in the interference count and affirmed the Board's interpretation, we can properly address the merits of Rapoport's anticipation argument. The Board found that the disclosure of the FPR Publication was limited to treatment of anxiety in patients suffering from sleep apnea with buspirone, and did not address treatment of the underlying sleep apnea disorder. What a reference teaches is a question of fact.... There is no disclosure in the FPR Publication of tests in which buspirone is administered to patients suffering from sleep apnea with the intent to cure the underlying condition.... The Board also correctly found that the FPR Publication does not show administering buspirone in any specific amounts to patients suffering from sleep apnea.... We note that there is no mention in the FPR Publication of administering buspirone to a patient at bedtime.... Therefore, for all the reasons stated above, we find that the Board's conclusion that the FPR Publication does not disclose administration of buspirone to patients suffering from sleep apnea to treat sleep apnea is supported by substantial evidence.

³² See *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993) (reversing PTO and holding, when PTO presented no evidence to cure *prima facie* differences between patent claim and USPTO assertions regarding what the allegedly invalidating prior art “taught”).

³³ See *In re McNeil-PPC*, 2008-1546 (Fed. Cir. July 31, 2009).

³⁴ See *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000).

As can be seen from the foregoing, the USPTO-identified portions of Mulgund, Simon and Madden ACQP do *not recite* the text of at least Clause [b] of amended Independent Claim 17: “means for transferring the agent to aggregate at least a part of one or more mote-addressed content indexes from the first set of motes to another mote, and said agent further comprising: means for installing the transferred multi-mote index creation agent on the another mote; and means for receiving, with the installed multi-mote index creation agent, at least a part of one or more mote-addressed content indexes of a second mote of the first set of motes.” (Emphasis Added)³⁵

To Applicant, it appears that the USPTO may try to equate the teaching of the Simon reference and the structure of amended claim 17. The Simon reference recites that a “mesh router is adapted to exclude another mesh router that is associated with a particular certificate” and “an exemplary public key infrastructure (PKI) at the mesh router tier in which each mesh router 102 is associated with a certificate 202.” The structure of clause [a] of amended claim 17 recites “an agent to aggregate on the mote in a first set of motes at least a part of one or more mote-addressed content indexes corresponding to a first type of content from the first set of motes administered by a first network administrator and owned or controlled by a first business entity, to aggregate on the mote at least a part of one or more first mote-addressed content indexes corresponding to a second type of content from the first set of motes to form a first aggregated mote-address content index, and **to expose at least a part of the first aggregated mote-addressed content index** to an aggregator that aggregates (i) **a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity** and (ii) **a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity.**” (Emphasis

³⁵ Claim 32 was rejected in view of Mulgund, Madden ACQP and Simon. The corresponding method claim 16 was rejected in view of Mulgund, Madden TinyDB, Simon and Levis. The USPTO attempted to map claim 16 on a configuration in Levis by which “A capsule sent in a packet contains a type (subroutines 0-3, clock, receive, send) and a version number. If Mate receives a more recent version of a capsule than the one of the specified type currently being used, Mate installs it.” Applicant points out that this mapping does not address at least the “transferred multi-mote index creation agent including instructions 1) for installation of the agent on the second mote, and 2) for receiving at least a part of one or more mote-addressed content indexes at the second mote” of amended claim 17 (incorporating the recitations of canceled claim 32).

Added) This record evidence in the Simon reference fails to equate to Simon teaching or suggesting that “aggregates (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity.”

The above recitation of amended clause [a] of Independent Claim 17 and the cited portions of the Madden ACQP Reference are, at first sight, on the first appearance, on the face of it, so far as can be judged from the first disclosure, very different on their faces. The structure of clause [a] of amended claim 17 recites “an agent to aggregate on the mote in a first set of motes at least a part of one or more mote-addressed content indexes corresponding to a first type of content from the first set of motes administered by a first network administrator owned or controlled by a first business entity, to aggregate on the mote at least a part of one or more first mote-addressed content indexes corresponding to a second type of content from the first set of motes to form a first aggregated mote-address content index, and **to transfer at least a part of the first aggregated mote-addressed content index to an aggregator that aggregates (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity.**” (Emphasis Added) The cited portions of Madden ACQP recite that “We have designed and implemented an ACQP engine called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network. TinyDB runs on the Berkeley Mica mote platform on top of the TinyOS [23] operating system”. As noted previously, Applicant is not sure what the USPTO has alleged in characterizing the Madden ACQP reference³⁶, but assuming the USPTO attempts to characterize the Madden ACQP reference as teaching the text of independent claim 17, the record evidence would fail to equate to the Madden TAG teaching or suggesting that “aggregates

³⁶ The USPTO has stated “Madden teaches aggregating at least a part of one or more mote addressed indexes [sensor attributes, such as group id].”

(i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in clause [a] of Applicant’s independent claim 17.

To Applicant, it appears that the USPTO may try to close a significant gap between the amended clause [a] and [b] and the actual recitations of the Madden ACQP and the Simon reference as shown above³⁷ as the USPTO-identified portions of Simon and Madden ACQP References do not recite the text of at least amended Clause [a] and/or [b] of Independent Claim 17: “aggregates (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator and owned or controlled by a second business entity” and “means for transferring the agent to aggregate at least a part of one or more mote-addressed content indexes from the first set of motes to another mote, and said agent further comprising: means for installing the transferred multi-mote index creation agent on the another mote; and means for receiving, with the installed multi-mote index creation agent, at least a part of one or more mote-addressed content indexes of a second mote of the first set of motes.”

Applicant has shown by direct quotations that amended Independent Claim 17 and the USPTO-cited Mulgund and Madden TAG reference are very different on their faces. *See supra* (quotation of Claim 17); (quotation of Mulgund); and (quotation of Madden ACQP). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the USPTO-cited art is very different from Claim 17, and Applicant has noted that USPTO has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the USPTO-cited technical material does not a

³⁷ Neither do the USPTO-identified portions of Simon recite “aggregating at least a part of one or more mote-addressed content indexes from a first set of motes administered by a first network administrator owned or controlled by a first business entity to form a first aggregated mote-addressed content index,” as recited in Clause [b].

establish a *prima facie* case of the unpatentability of Claim 17 either under the MPEP or under controlling legal standards.

Accordingly, insofar as that Mulgund, Madden ACQP and/or Simon does not recite the text of at least Clause [a] and/or Claus [b] of Applicant's Independent Claim 17, and insofar as that USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund, Madden ACQP and/or Simon could be modified/combined with Madden to teach at least Clause [a] of Independent Claim 17. Applicant respectfully points out that under the MPEP guidelines as set forth above, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 17 for at least these reasons. Thus, Applicant respectfully asks USPTO to hold amended Independent Claim 17 allowable and to issue a Notice of Allowability of same.

With respect to USPTO assertions regarding the teachings of Mulgund, Madden ACQP and/or Simon, Applicant demonstrated above that the express recitations of Mulgund and Madden are not as USPTO alleges, and that USPTO has provided no evidence—let alone the preponderance of the evidence required—to support USPTO assertions as to the factual conclusion as to what Mulgund, Madden ACQP and/or Simon “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, USPTO has presented no evidence that Mulgund, Madden ACQP and/or Simon teaches as asserted by USPTO. In addition, Applicant respectfully points out that even if USPTO's assertions regarding the teachings of Mulgund, Madden ACQP and/or Simon were supported, such would be of no moment in that USPTO has yet to connect the alleged teaching of Mulgund, Madden ACQP and/or Simon to the actual express language of Applicant's amended Independent Claim 17. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold amended Independent Claim 17 allowable and issue a Notice of Allowability of same.

**(3) USPTO Interpretation Appears to be Based on
Inadvertent Impermissible Hindsight, Personal
Knowledge, or Official Notice; Applicant
Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund, Madden ACQP and/or Simon actually recites, the question thus naturally arises as to how USPTO saw Mulgund as “teaching” something related to Clause [a] and [b] of Independent Claim 17. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable USPTO-cited document of record that shows or suggests what USPTO purports the references to teach. From this and the express recitations of Mulgund, Madden ACQP and/or Simon as set forth, it follows that USPTO is interpreting Mulgund, Madden ACQP and/or Simon through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, USPTO’s assertions regarding Mulgund, Madden ACQP and/or Simon are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold Independent Claim 17 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as USPTO has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of USPTO assertions regarding what the technical material cited by USPTO “teaches,” Applicant infers that the USPTO is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if USPTO desires to maintain the rejection, in the next communication, Applicant respectfully requests that the USPTO provide an affidavit or declaration setting forth objectively verifiable evidence in support of USPTO’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” See, e.g., MPEP S 2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2). .

2. Dependent Claims 18-32: Patentable for at Least Reasons of Dependency from Independent Claim 17.

Claims 18-32 depend either directly or indirectly from Independent Claim 17. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 18-32 are patentable for at least the reasons why Independent Claim 17 is patentable. Accordingly, Applicant respectfully requests that USPTO hold dependent Claims 18-32 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

C. Technical Material Cited by USPTO (Mulgund et al. (U.S. Patent No. 2002/0161751 A1 and "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al.) Does Not Show/Suggest Recitations of Amended Independent Claim 33 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Independent Claim 33

Independent Claim 33 recites as follows:

33. A system comprising:
a computer system to aggregate at least a part of (a) one or more mote-addressed content indexes corresponding to content of a first type from a first set of motes administered by a first network administrator and owned by a first business entity, said one or more mote-addressed content indexes from the first set of motes including metadata indicating that the first set of motes are owned by the first business entity, and to aggregate at least a part of one or more mote-addressed content indexes corresponding to content of a second type from a second set of motes administered by a second network administrator and owned by a second business entity, said one or more mote-addressed content indexes from the second set of motes including metadata indicating that the second set of motes are owned by the second business entity, the motes in the first set of motes and the second set of motes comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality, said computer system to aggregate data from a first and second reporting entity, said first reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the first set of motes, and said second reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the second set of motes.

As shown following, (1) USPTO has ignored several express recitations of Independent Claim 33 in his analysis, (2) USPTO is interpreting Mulgund and/or Madden TAG to “teach” at least a portion of the text of Independent Claim 33 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/combinations of technologies cited by USPTO to meet the recitations of Independent Claim 33 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, USPTO has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 33 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that USPTO withdraw his rejections of Claim 33 and Issue a Notice of Allowability for same.

**a) Technical Material Cited by USPTO Does Not Recite
the Text of at Least Amended Independent Claim 33**

As set forth above, amended Independent Claim 33 as currently presented recites:

“33. A system comprising:

[b] A system comprising:

a computer system to aggregate at least a part of (a) one or more mote-addressed content indexes corresponding to content of a first type from a first set of motes administered by a first network administrator and owned by a first business entity, said one or more mote-addressed content indexes from **the first set of motes including metadata indicating that the first set of motes are owned by the first business entity**, and to aggregate at least a part of one or more mote-addressed content indexes corresponding to content of a second type from a second set of motes administered by a second network administrator and owned by a second business entity, said one or more mote-addressed content indexes from **the second set of motes including metadata indicating that the second set of motes are owned by the second business entity**, the motes in the first set of motes and the second set of motes comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality, said computer system to aggregate data from a first and second reporting entity, said first reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the first set of motes, and said second reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the second set of motes.” (Emphasis Added)

Concerning this, USPTO has stated as follows,

“As to claim 33, Mulgund teaches:

a computer system to aggregate at least a part of one or more mote-addressed content indexes corresponding to content of a first type from a first set of motes [database server 10 for aggregating indexing information related to sensor data outputs stored in Sensor Data Table 24. It is well known to one of ordinary skill in the art that such indexing data allows one to distinguish between different sensor data outputs, as discussed in connection with relational databases of Figs. 3 and 4] (abstract, par. [0005] and [0025], Figs. 2-4), wherein the first set of motes [nodes to the left of Fig. 1] is administered by a first network administrator [first network access point to the left of Fig. 1] and to aggregate at least a part of one or more mote-addressed content indexes corresponding to content of a second type from a second set of motes [each Node Data

Table contains node's unique address, which identifies a sensing function of that node] (par. [0029], [0042] in Mulgund), the second set of motes [nodes to the right of Fig. 1] administered by a second network administrator [second network access point to the right of Fig. 1], the motes in the first set of motes and the second set of motes comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality [at least one sensing node (2) in the first set of sensing nodes (Fig. 1) comprising a computational device being a small embedded platform that has one or more sensors (16)] (par. [0026]), said computer system to aggregate data from a first and second reporting entity [knowledge base and API] (par. [0026]), said first reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the first set of motes [software API allows the network modeling agent to access a node on the network and retrieve information stored in a knowledge base (18) of the node] (par. [0026], [0044], [0030]), and said second reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the second set of motes (par. [0030]).

Mulgund is silent as to whether the first and second network access points are owned or controlled by different business entities.

Simon is directed to a method of controlling access of mesh routers to a network resources based on information contained in a certificate associated with the particular router. See abstract. Simon teaches the first set of devices (104C) is administered by a first network administrator (102C) controlled by a first business entity [mesh router 102C is controlled by the associated certificate (202C)] and wherein the second set of devices (1048) is administered by a second network administrator (1028) controlled by a second business entity [mesh router 1028 is controlled by the associated certificate (2028)] (Figs. 1 and 2; col. 3 lines 4-18; col. 4 lines 23-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having the first and second network access points being owned or controlled by different business entities in order to introduce control and/or accountability into spontaneously-formed wireless networks (col. 1 lines 43-45 of Simon).

See Examiner's Office Action, p. 17-18 (3 November 2010).

Applicant respectfully disagrees and traverses the rejection.

(1) USPTO Citations With Regard to Independent Claim 33:

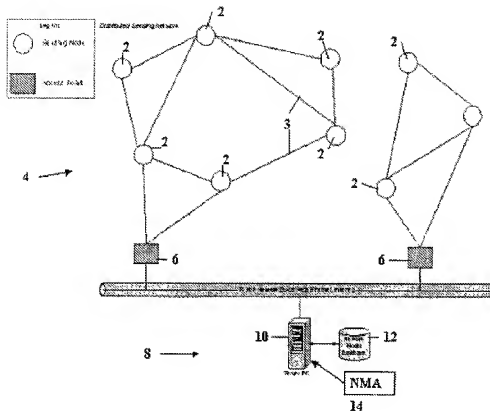
Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by USPTO, and so far as Applicant can discern, Mulgund does not recite the text of clause [b] of Applicant's amended independent claim 33. Rather, the portions of Mulgund identified by USPTO recite as follows:

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

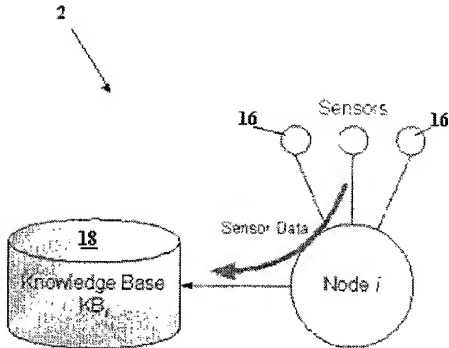
See *Mulgund* (paragraph [0026])

To build the database representation of the sensor network 4 described above, the NMA 14 employs a means to traverse the network in order to interrogate each node. The NMA 14 employs a quasi-recursive algorithm that is run on the database server 10 to build and maintain the database network model. The NMA 14 is a software agent resident on the database server 10 and written in any compatible computer language, whose responsibility is to build and update this model. As discussed earlier, it is assumed that there exists some software API that allows the NMA 14 to access each node on the network, which is reached via one or more access points 6 that can be reached via Internet protocols from the database server 10.

See *Mulgund* (paragraph [0044])



See Mulgund (Fig. 1)



See *Mulgund* (Fig. 2)

Applicant respectfully points out that Applicant has reviewed the portions of Madden TAG identified by USPTO, and so far as Applicant can discern, Madden TAG does not recite the text of clause of Applicant's amended independent claims 33. Rather, the portions of Madden TAG identified by USPTO recite as follows:

We present the Tiny AGgregation (TAG) service for aggregation in TinyOS. TAG allows users to express simple, declarative queries and have them distributed and executed efficiently in networks of low-power, wireless sensors. We discuss various generic properties of aggregates, and show how those properties affect the performance of our in-network approach. We include a performance study demonstrating the advantages of our approach over traditional centralized, out-of-network methods, and discuss a variety of optimizations for improving the performance and fault-tolerance of the basic solution.

TAG operates as follows: users pose aggregation queries from a powered, storage-rich basestation. Operators that implement the query are distributed into the network by piggybacking on the existing ad hoc networking protocol. Sensors route data back towards the user through a routing tree rooted at the basestation. As data flows up this tree, it is aggregated according to an aggregation function and value-based partitioning specified in the query. For

example, consider the problem of counting the number of nodes in a network of indeterminate size. First, the request to count is injected into the network. Then, each leaf node in the tree reports a count of 1 to their parent; interior nodes sum the count of their children, add 1 to it, and report that value to their parent. Counts propagate up the tree in this manner, and flow out at the root.

Given the simple routing protocol from Section 2.1 and our SQL-like query model, we now discuss the implementation of the core TAG algorithm for in-network aggregation.

A naive implementation of sensor network aggregation would be to use a centralized, server-based approach where all sensor readings are sent to the base station, which then computes the aggregates. In TAG, however, we compute aggregates in-network whenever possible, because, if properly implemented, this approach can be lower in number of message transmissions, latency, and power consumption than the server-based approach. We will measure the advantage of in-network aggregation in Section 5 below; first, we present the basic algorithm in detail. We first consider the operation of the basic approach in the absence of grouping; we show how to extend it with grouping in Section 4.2.

4.1 Tiny Aggregation

TAG consists of two phases: a distribution phase, in which aggregate queries are pushed down into the network, and a collection phase, where the aggregate values are continually routed up from children to parents. Recall that our query semantics partition time into epochs of duration, and that we must produce a single aggregate value (when not grouping) that combines the readings of all sensors in the network during that epoch.

Given our goal of using as few messages as possible, the collection phase must insure that parents in the routing tree wait until they have heard from their children before propagating an aggregate value for the current epoch. We will accomplish this by having parents subdivide the epoch such that children are required to deliver their partial state records during a parent-specified time interval. This interval is selected such that there is enough time for the parent to combine partial state records and propagate its own record to its parent.

4.2 Grouping

Grouping in TAG is functionally equivalent to the GROUP BY clause in SQL: each sensor reading is placed into exactly one group, and groups are partitioned according to an expression over one or more attributes. The basic grouping technique is to push the expression down with the query, ask sensors to choose the group they belong to, and then, as answers flow back, update aggregate values in the appropriate groups.

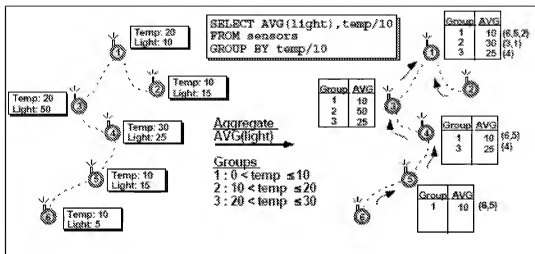
Partial state records are aggregated just as in the approach described above, except that those records are now tagged with a group id. When a sensor is a leaf, it applies the grouping expression to compute a group id. It then tags its partial state record with the group and forwards it on to its parent. When a sensor receives an aggregate from a child, it checks the group id. If the child is in the same group as the sensor, it combines the two values using the combining function. If it is in a different group, it stores the value of the child's group along

with its own value for forwarding in the next epoch. If another child message arrives with a value in either group, the sensor updates the appropriate aggregate. During the next epoch, the sensor will send out the value of all the groups it collected information about during the previous interval, combining information about multiple groups into a single message as long as the message size permits. Figure 2 shows an example of computing a query grouped by temperature that selects average light readings.

Recall that queries can also contain a HAVING clause, which constrains the set of groups in the final query result. We sometimes pass this predicate into the network along with the grouping expression. The predicate is only sent into the network if it can potentially be used to reduce the number of messages that must be sent: for example, if the predicate is of the form $\text{MAX}(\text{attr}) < x$, then information about groups with $\text{MAX}(\text{attr}) > x$ need not be transmitted up the tree, and so the predicate is sent down into the network. When a node detects that a group does not satisfy a HAVING clause, it can notify other nodes in the network of this information to suppress transmission and storage of values from that group. Note that HAVING clauses can be pushed down only for monotonic aggregates; non-monotonic aggregates are not amenable to this technique. However, not all HAVING predicates on monotonic aggregates can be pushed down; for example, $\text{MAX}(\text{attr}) > x$, cannot be applied in the network because a node cannot know that, just because its local value of x is less than the MAX over the entire group is less than x .

Because the number of groups can exceed available storage on any one (non-leaf) sensor, a way to evict groups is needed. Once an eviction victim is selected, it is forwarded to the sensor's parent, which may choose to hold on to the group or continue to forward it up the tree. Notice that a single sensor may evict several groups in a single epoch (or the same group multiple times, if a bad victim is selected). This is because, once group storage is full, if only one group is evicted at a time, a new eviction decision must be made every time a value representing an unknown or previously evicted group arrives. Because groups can be evicted, the base station at the top of the network may be called upon to combine partial groups to form an accurate aggregate value. Evicting partially computed groups is known as partial preaggregation, as described in [11].

Thus, we have shown how to partition sensor readings into a number of groups and properly compute aggregates over those groups, even when the amount of group information exceeds available storage in any one sensor. We will discuss experiments with grouping and group eviction policies in Section 5.2. First, we summarize some of the additional benefits of TAG.



See *Madden TAG* (abstract, section 1.1 par. 2, section 4, 4.1 pars. 1-2, and 4.2; Fig. 2)

As can be seen from the foregoing, the USPTO-identified portions of Mulgund do not recite the text of at least Clause [b] of Independent Claim 33. For example, Mulgund discloses that “the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18,” (Mulgund paragraph [0026]). On the other hand clause [b] recites “a computer system to aggregate at least a part of one or more mote-addressed content indexes corresponding to content of a first type from a first set of motes administered by a first network administrator and owned by a first business entity, said one or more mote-addressed content indexes from the first set of motes including metadata indicating that the first set of motes are owned by the first business entity, and to aggregate at least a part of one or more mote-addressed content indexes corresponding to content of a second type from a second set of motes and administered by a second network administrator owned by a second business entity, said one or more mote-addressed content indexes from the second set of motes including metadata indicating that the second set of motes are owned by the second business entity, the motes in the first set of motes and the second set of motes comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality, said computer system to aggregate data from a first and second reporting entity, said first reporting entity being operable to report an aggregation of at least a part of one or more mote-addressed content indexes from the first set of motes, and said second reporting entity being operable to

report an aggregation of at least a part of one or more mote-addressed content indexes from the second set of motes.” (Emphasis Added) The cited text does not show or recite “the first set of motes administered by a first network administrator and owned by a first business entity, said one or more mote-addressed content indexes from the first set of motes including metadata indicating that the first set of motes are owned by the first business entity,” and “the second set of motes administered by a second network administrator and owned by a second business entity, said one or more mote-addressed content indexes from the second set of motes including metadata indicating that the second set of motes are owned by the second business entity.”

Applicant has reviewed the USPTO-cited portions of Mulgund and Madden TAG and is unable to locate a recitation of clause [b] of Claim 33. Applicant further respectfully points out that the USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to why the text of the reference passages should be interpreted to teach clause [b] of amended Independent Claim 33.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no proffered evidence that would support a finding of fact that Mulgund describes or teaches the text of Clause [b] of independent Claim 33. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest independent Claim 33 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 33 and the USPTO-cited Mulgund reference are very different on their faces. See *supra* (quotation of Claim 33); (quotation of Mulgund); and (quotation of Madden TAG). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the USPTO-cited art is very different from Claim 33, and Applicant has noted that USPTO has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences.

Thus the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Claim 33 either under the MPEP or under controlling legal standards.

Accordingly, insofar as that Mulgund does not recite the text of at least Clause [b] of Applicant's Independent Claim 33, and insofar as that USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clause [b] of amended Independent Claim 33, Applicant respectfully points out that under the MPEP guidelines as set forth above, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of Independent Claim 33 for at least these reasons. Thus, Applicant respectfully asks USPTO to hold Independent Claim 33 allowable and to issue a Notice of Allowability of same.

With respect to USPTO assertions regarding the teachings of Mulgund and/or Madden TAG, Applicant demonstrated above that the express recitations of Mulgund and/or Madden TAG are not as USPTO alleges, and that USPTO has provided no evidence—let alone the preponderance of the evidence required—to support USPTO assertions as to the factual conclusion as to what Mulgund and/or Madden TAG “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, USPTO has presented no evidence that Mulgund and/or Madden TAG teaches as asserted by USPTO. In addition, Applicant respectfully points out that even if USPTO's assertions regarding the teachings of Mulgund and/or Madden TAG were supported, such would be of no moment in that USPTO has yet to connect the alleged teaching of Mulgund and/or Madden TAG to the actual express language of Applicant's Independent Claim 33. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold amended Independent Claim 33 allowable and issue a Notice of Allowability of same.

- (2) USPTO Interpretation Appears to be Based on Inadvertent Impermissible Hindsight, Personal Knowledge, or Official Notice; Applicant Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund and/or Madden TAG actually recites, the question thus naturally arises as to how USPTO could see Mulgund and/or Madden TAG as “teaching” something related to Clause [b] of amended Independent Claim 33. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable USPTO-cited document of record that shows or suggests what USPTO purports the references to teach. From this and the express recitations of Mulgund and/or Madden TAG as set forth, it follows that USPTO is would be interpreting Mulgund and/or Madden TAG through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, USPTO’s assertions regarding Mulgund and/or Madden TAG are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold amended Independent Claim 33 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as USPTO has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of USPTO assertions regarding what the technical material cited by USPTO “teaches,” Applicant infers that the USPTO is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if USPTO desires to maintain the rejection, in the next communication, Applicant respectfully requests that the USPTO provide an affidavit or declaration setting forth objectively verifiable evidence in support of USPTO’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g.,* MPEP §2144.03(C), *If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the Examiner Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

- D. Technical Material Cited by USPTO (Mulgund et al. (U.S. Patent No. 2002/0161751 A1), Madden et al. ("The Design of an Acquisitional Query Processor for Sensor Networks") and Simon et al. (US Patent No. 7,665,126 B2)) Do Not Show or Suggest the Text of Independent Claim 34 and Dependent Claims 35-37 as Presented Herein; Notice of Allowance of Same Respectfully Requested**

1. Independent Claim 34

Amended Independent Claim 34 as presented recites:

34. A system comprising:

A plurality of motes comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, and a sensing functionality; and

a first multi-mote index creation agent resident in the first mote of a first set of motes of the plurality of motes administered by a first network administrator and owned or controlled by a first business entity, said first multi-mote index creation agent configured to (a) aggregate at least a part of a first mote-addressed content index including an index of content of the first set of motes of the plurality of motes to form a first aggregated mote-addressed content index, the first aggregated mote-addressed content index including first metadata indicating that the first set of motes are owned or controlled by the first business entity, and (b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, said one or more mote-addressed content indexes from the first set of motes including the first metadata, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity.

As shown following, (1) the USPTO has disregarded its duty to undergo the broadest reasonable interpretation consistent with the specification of Independent Claim 34 by an ill conceived mapping onto the USPTO-cited material, which fails to recite several express recitations of these claims; (2) the USPTO is asserting one or more characterizations that each cited reference "teaches" at least some of the text of Independent Claim 17, but has not provided any objectively verifiable evidence supporting

these assertions; and (3) the USPTO has failed to adduce objective evidence of how to modify/combine the cited art to match the recitations of Independent Claim 34.

Under the MPEP standards as set forth herein, USPTO has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 34 for any or all of the forgoing reasons. Accordingly, Applicant respectfully requests that USPTO withdraw his rejections of Claim 34 and Issue a Notice of Allowability for same.

**a) Technical Material Cited by USPTO Does Not Recite
the Text of at Least Independent Claim 34**

As set forth above, Amended Independent Claim 34 recites:

34. A system comprising:

[a] a first mote of a plurality of motes, the first mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, and a sensing functionality; and

[b] a first multi-mote index creation agent resident in the first mote of a first set of motes of the plurality of motes administered by a first network administrator and owned or controlled by a first business entity, said first multi-mote index creation agent configured to (a) aggregate at least a part of a first mote-addressed content index including an index of content of the first set of motes of the plurality of motes to form a first aggregated mote-addressed content index, **the first aggregated mote-addressed content index including first metadata indicating that the first set of motes are owned or controlled by the first business entity**, and (b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, said one or more mote-addressed content indexes from the first set of motes including the first metadata, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, said one or more mote-addressed content indexes from the second set of motes **including second metadata indicating that the second set of motes are owned or controlled by the second business entity**. (Emphasis Added)

It appears to Applicant that the USPTO may try to map “(b) a first multi-mote index creation agent resident in the first mote of a first set of motes of the plurality of motes administered by a first network administrator and owned or controlled by a first business entity, said first multi-mote index creation agent configured to (a) aggregate at least a part of a first mote-addressed content index including an index of content of the

first set of motes of the plurality of motes to form a first aggregated mote-addressed content index, the first aggregated mote-addressed content index including first metadata indicating that the first set of motes are owned or controlled by the first business entity, and (b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, said one or more mote-addressed content indexes from the first set of motes including the first metadata, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity,” onto a configuration in Simon by which “an exemplary public key infrastructure (PKI) at the mesh router tier in which each mesh router 102 is associated with a certificate 202.” Applicant notes that the USPTO has not explained how it reaches such mappings under the framework of the broadest reasonable interpretation consistent with the specification as is the USPTO’s burden (e.g., such as by examples drawn from Applicant’s claims or detailed description),³⁸ and furthermore, Applicant points out that this mapping does not address “the first aggregated mote-addressed content index including first metadata indicating that the first set of motes are owned or controlled by the first business entity, “ and “said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity.”

In view of the foregoing, Applicant points out that although Independent Claim 34 has been quoted in the present rejection, several claim terms have not been addressed in its analysis. Because the USPTO-cited material fails to recite at least the foregoing

³⁸ Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the USPTO fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. See, e.g., 37 C.F.R. § 10.83 (“A practitioner should represent a client zealously within the bounds of the law.”); 37 C.F.R. § 10.84 (“[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part.”); and 37 C.F.R. § 10.76 (“A practitioner should represent a client competently.”). For these and other reasons, this document notes instances in which the USPTO did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the USPTO’s behalf.

bolded recitations of Independent Claim 34,³⁹ under the MPEP guidelines as set forth above, such material does not establish a *prima facie* case of the unpatentability of Independent Claim 34. For these reasons, Applicant respectfully asks the USPTO to hold Independent Claim 34 allowable and to issue a Notice of Allowability of same.

- (1) **The USPTO is Characterizing/Asserting U.S. Pub. No. 2002/0161751 A1 (“Mulgund”) and/or “The Design of an Acquisitional Query Processor for Sensor Networks” by Samuel Madden et. al. (“Madden ACQP”) and/or U.S. Pat. No. 7,665,126 (“Simon”) to “Teach” the Text of Independent Claim 34, But Does Not Support Its Characterization/Assertion, Therefore the USPTO Has Not Met Its Burden to Establish a *Prima Facie* Case of Unpatentability for Independent Claim 34:**

Concerning this, USPTO has stated as follows:

“As to claim 34, Mulgund teaches:

a first mote of a plurality of motes, the first mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality [at least one sensing node (2) in the first set of sensing nodes (Fig. 1) comprising a computational device being a small embedded platform that has one or more sensors (16)] (par. [0026]); and

a first multi-mote index creation agent [sensor network modeling agent (14)] (Fig. 1), the first set of motes administered by a first network administrator [first network access point to the left of Fig. 1], said first multi-mote index creation agent configured to (a) aggregate at least a part of at least a part of a first mote-addressed content index including an index of content of the first set of motes of the plurality of motes to form a first aggregated mote-addressed content index [network modeling agent creates a relational database containing indexing information related to sensor data outputs stored in Sensor Data Table 24. It is well known to one of ordinary skill in the art that such indexing data allows one to distinguish between different sensor data outputs, as discussed in connection with relational databases of Figs. 3 and 4] (Fig. 3 and par. [0037]), and (b) expose [make available] at least a part of the first aggregated mote-addressed content index to an aggregator [database server 10] of (i) a first-set content index from the first set of motes [nodes to the left of Fig. 1] administered by the first network

³⁹ Although Independent Claim 17 has been quoted in the present rejection, several claim terms have not been addressed in its analysis, as shown below.

administrator [first network access point to the left of Fig. 1] and (ii) a second set content index from a second set of motes [nodes to the right of Fig. 1] administered by a second network administrator [second network access point to the right of Fig. 1].

It is noted that (i) and (ii) is a non-functional descriptive material since it does not further limit either aggregating or exposing step.

Mulgund is silent as to whether the first and second network access points are owned or controlled by different business entities.

Mulgund also teaches that each node contains some local memory or other knowledge base for recording sensor output data, which can be retrieved by interrogating the node (par. [0030]), which suggests to one of ordinary skill in the pertinent art that there exists some agent resident in a mote that collects data from sensors and stores it in the local knowledge base. However, such local agent, per se, is not explicitly shown.

Madden shows a multi-mote index creation agent resident in a mote [a TinyDB, which is a distributed query processor that runs on each of the nodes in a sensor network] (section 1 Introduction, par. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having a multi-mote index creation agent being resident in the mote in order to select, join, project, and aggregate data from the sensors (section 1 Introduction, par. 4 in Madden).

Simon is directed to a method of controlling access of mesh routers to a network resources based on information contained in a certificate associated with the particular router. See abstract. Simon teaches the first set of devices (104C) is administered by a first network administrator (102C) controlled by a first business entity [mesh router 102C is controlled by the associated certificate (202C)] and wherein the second set of devices (1048) is administered by a second network administrator (1028) controlled by a second business entity [mesh router 1028 is controlled by the associated certificate (2028)] (Figs. 1 and 2; col. 3 lines 4-18; col. 4 lines 23-32).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Madden by having the first and second network access points being owned or controlled by different business entities in order to introduce control and/or accountability into spontaneously-formed wireless networks (col. 1 lines 43-45 of Simon).” Examiner’s *Office Action*, p. 27-29 (3 November 2010).

Applicant respectfully disagrees and traverses the rejection.

- (2) **The USPTO Has Put Forth No Evidence Supporting Its Characterization/Assertion That Mulgund, Madden ACQP and/or Simon “Teaches” Recitations of Independent Claim 34:**

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by USPTO, and so far as Applicant can discern, Mulgund does not recite the text of clause [b] of Applicant's amended independent claim 34. Rather, the portions of Mulgund identified by USPTO recite as follows:

FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) *that have one or more sensors 16 providing high-value information connected to it.* The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

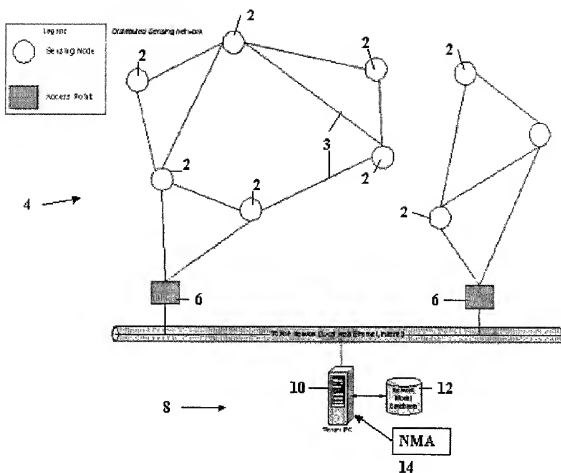
See *Mulgund* (paragraph [0026]) (Emphasis Added)

each node contains some local memory or other knowledge base 18 for recording sensor output data, which can be retrieved by interrogating the node;

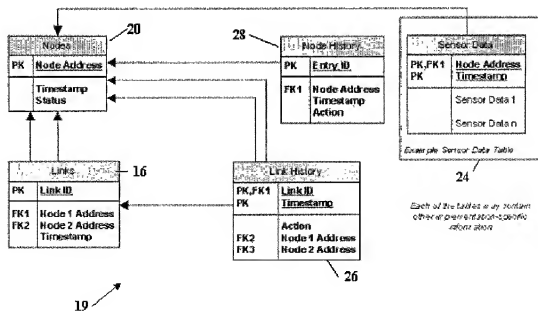
See *Mulgund* (paragraph [0030])

The Nodes Table 20 maintains a list of all known sensor nodes 2 in the network 4. Each node is identified by a unique Node Address, which is a primary key for the Nodes Table 20. The Nodes Table also contains a Status field, which is used to indicate whether a node is known to be active. This field is used for marking nodes that have disappeared from the network (which could later reappear). At present, it is anticipated that this Status variable will take on one of just a small set of mutually exclusive values that indicate whether or not the associated node continues to be an active, reachable member of the network 4. Finally, the Nodes Table 20 contains a Timestamp field that indicates when the Status information was last updated. When a node disappears from the network for whatever reason, the corresponding entry in the Nodes Table 20 is not deleted; it is marked as unreachable. The reason for doing so is explained below.

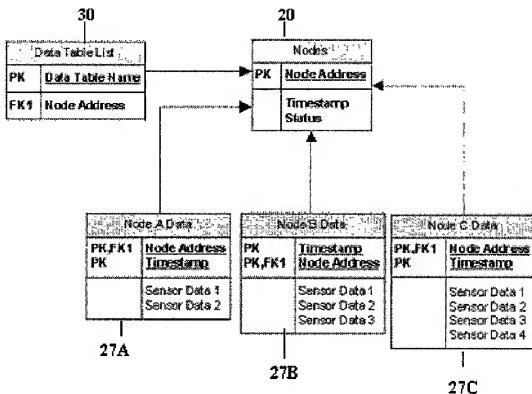
See *Mulgund* (paragraph [0037])



See Mulgund (Fig. 1)



See *Mulgund* (Fig. 3)



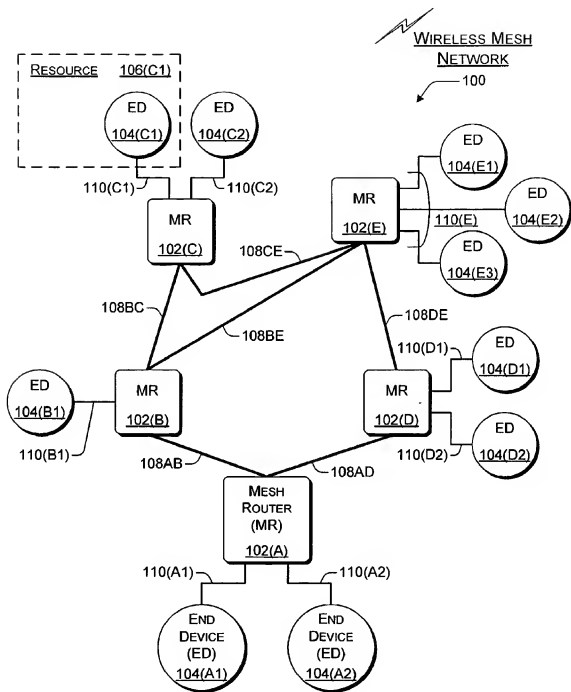
See *Mulgund* (Fig. 4)

Applicant respectfully points out that Applicant has reviewed the portions of Madden ACQP identified by USPTO, and so far as Applicant can discern, Madden ACQP does not recite the text of clause of Applicant's amended independent claim 34. Rather, the portions of Madden ACQP identified by USPTO recite as follows:

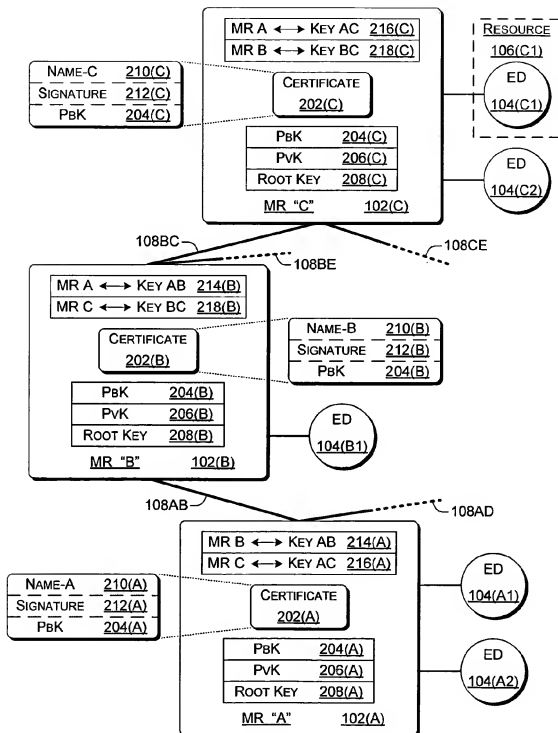
"We have designed and implemented an ACQP engine called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network. TinyDB runs on the Berkeley Mica mote platform on top of the TinyOS [23] operating system. We chose this platform because the hardware is readily available from commercial sources [13] and the operating system is relatively mature. TinyDB has many of the features of a traditional query processor (e.g. the ability to select, join, project, and aggregate data), but, as we will discuss in this paper, also incorporates a number of other features designed to minimize power consumption via acquisitional techniques. These techniques taken in aggregate, can lead to orders of magnitude improvement in power consumption and increased accuracy of query results over non-acquisitional systems that do not actively control when and where data is collected."

See *Madden ACQP* (section 1 Introduction, par. 4)

Applicant respectfully points out that Applicant has reviewed the portions of Simon identified by USPTO, and so far as Applicant can discern, Simon does not recite the text of clause of Applicant's amended independent claim 34. Rather, the portions of Simon identified by USPTO recite as follows:



799.1



799.2

In an exemplary method implementation, a method includes: designating a neighborhood administrator; receiving notification of a delinquent router from the

designated neighborhood administrator; and excluding the delinquent router responsive to the notification. In an exemplary mesh router implementation, a mesh router is capable of establishing a wireless mesh network with other mesh routers, the mesh router is further capable of designating a neighborhood administrator mesh router; and the mesh router is adapted to exclude another mesh router that is associated with a particular certificate when the particular certificate has been identified as delinquent by the designated neighborhood administrator mesh router.

Although each mesh router 102 is illustrated as being in wireless communication with from one to three end devices 104, each may alternatively be in communication with any number of end devices 104. Mesh router 102(A) is in wireless communication with two end devices 104(A1) and 104(A2) over wireless links 110(A1) and 110(A2), respectively. Mesh router 102(B) is in wireless communication with one end device 104(B1) over wireless link 110(B1). Mesh router 102 (C) is in wireless communication with two end devices 104 (C1) and 104(C2) over wireless links 110(C1) and 110(C2), respectively. Similarly, mesh router 102(E) has wireless links 110(E) with three end devices 104(E1), 104(E2), and 104 (E3). Mesh router 102(D) has wireless links 110(D1) and 110(D2) to two end devices 104(D1) and 104(D2), respectively.

FIG. 2 illustrates an exemplary public key infrastructure (PKI) at the mesh router tier in which each mesh router 102 is associated with a certificate 202. Three exemplary mesh routers 102(A), 102(B), and 102(C) are specifically shown. As illustrated, each mesh router 102 includes a certificate 202, a public key (PbK) 204, a private key (PvK) 206, and a root key 208. Each certificate 202 includes a name 210, a signature 212, and the corresponding public key 204. Mesh router "A" 102(A) is used in particular to describe these general aspects of the exemplary PKI at the mesh router tier.

See *Simon* (Figs. 1 and 2; Abstract, col. 3 lines 4-18; col. 4 lines 23-32)

The USPTO may characterize *Simon* to “teach” at least some of the text of amended Independent Claim 34, but cannot support its characterization with objectively verifiable evidence. The USPTO has therefore cannot met its burden to establish a *prima facie* case of unpatentability for amended Independent Claim 34. What a reference “teaches” is a question of fact.^{40,41,42} Conclusory statements that a reference “teaches”

⁴⁰ See *Rapoport v. Dement*, 254 F.3d 1053, 1060 (Fed. Cir. 2001) (“What a reference **teaches** is a **question of fact**...**Therefore, we review the Board’s characterization of the disclosure in the FPR Publication for substantial evidence.**”) (emphasis added).

⁴¹ *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993) (reversing the PTO and holding when the PTO presented no evidence to cure *prima facie* differences between patent claim and USPTO assertions regarding what the allegedly invalidating prior art “taught”)

something beyond its bare recitations/direct disclosure do not constitute ANY evidence of such “teachings” unless they are supported by objective evidence. See *In re McNeil-PPC*, 2008-1546 (Fed. Cir. July 31, 2009);⁴³ *In re Lee*, 277 F.3d 1338 (Fed. Cir. 2002);⁴⁴ *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000) (“Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto. ... Broad conclusory statements standing alone are not “evidence.”).⁴⁵ Even if the PTO

⁴² Anticipation, as well as what a reference teaches, is a question of fact. *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1323 (Fed. Cir. 2002).

⁴³ In *McNeil*, the USPTO had rejected claims reciting a tampon having “a generally cylindrical compressed, solid fibre core” and ribs “compressed less than the fiber core” in view of a Japanese patent application (“Sasaki”). *McNeil* appealed to the Board of Patent Appeals and Interferences, which “specifically found that ‘Sasaki reasonably appears to depict a tampon having a generally cylindrical absorbent portion with a generally cylindrical compressed solid fiber core from which longitudinal ribs extend radially outward.’” See *id.*, 2008-1546, slip op. 1, 3 (Fed. Cir. July 31, 2009). In light of this and its finding that of each rib of Sasaki being “compressed less than the fiber core,” the Board affirmed the rejections. Insofar that the Sasaki reference did not directly disclose/recite as alleged by the Board, and since the Board did not supply evidence supporting its statement that “Sasaki reasonably appears to depict a tampon having a generally cylindrical absorbent portion with a generally cylindrical compressed solid fiber core from which longitudinal ribs extend radially outward,” the Federal Circuit reversed the rejection for lack of “substantial evidentiary support,” stating as follows:

There is not substantial evidence, indeed, no evidence, that Sasaki discloses ribs “compressed less than the fiber core” or “a generally cylindrical compressed, solid fiber core.” ... Just as the Sasaki figures do not indicate the relative compression of the different portions of the tampon, the Sasaki figures completely lack any indication of the relative coarseness of different portions. ... Lastly, turning to the issue of spacing of the ribs, Figure 8 shows a space between the bottommost ribs, and there is arguably some space shown between other ribs. However, because it is neither clear that Sasaki discloses a core nor which portions of Sasaki’s tampon the Board considered to be the ribs and which the Board considered to be the core, we cannot say that substantial evidence supports the Board’s determination that Sasaki discloses ribs separated from each other “at the proximal end by an amount greater than” than at “the distal end.”

See *id.*, 2008-1546, slip op. 1, 10-11 (Fed. Cir. July 31, 2009).

⁴⁴ In *Lee*, the USPTO argued that, to the “common sense of a person of ordinary skill in the art,” it was obvious that one could combine a prior patent for an on-screen television menu with an on-screen picture-quality adjustment for a video game played on a television illustrated in the game’s handbook. The Federal Circuit ruled that obviousness must be based on “objective evidence of record.” Finding no specific published suggestion in the record, the Federal Circuit ruled the invention patentable. See *id.*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (describing the BPAI’s obligation to develop an evidentiary basis for its factual findings to allow for meaningful judicial review under the substantial evidence standard).

⁴⁵ In *Kotzab*, the Federal Circuit reversed the BPAI as follows:

The USPTO cites Evans for teaching that “one *system* constructed and operated according to the invention may be used to control a number of valves.” Evans application, p. 19, ll. 6-8 (emphasis added). In view of this disclosure only, the USPTO concluded that Evans

personnel were to seek to support their characterizations with an expert witness affidavit, the law is that conclusory statements by an expert that a reference “teaches” something beyond its bare recitations/direct disclosure does not constitute ANY evidence of such “teachings” unless they are supported by objective documentary evidence.⁴⁶ Thus, when a party to a matter asserts that a reference “teaches” something beyond its bare recitations/direct disclosure, and that factual assertion is challenged by an opposite party, the law requires that the asserting party provide objective evidentiary support to “close the gap” between what the reference recites and the what the asserting party *alleges* the reference teaches; in the absence of such evidence, there should be no finding of fact in favor of the asserted teaching.^{47,48,49,50} For each instance below in which the USPTO has

teaches the use of one *sensor* to control a number of valves. This conclusion must necessarily rest on the unstated premise by the USPTO that “one system” is equal to “one sensor.”

But the Board's decision, adopting the USPTO's premise, lacks the necessary substantial evidence to support a rejection of Kotzab's claims. Specifically, there is not substantial evidence to show that “one system” is the same thing as “one sensor.” The words “sensor” and “probe” are used throughout Evans to refer to the device that measures the mold temperature. ... Evans clearly never uses the term “system” as a substitute for the simple temperature measuring device it calls “sensor.” And, the Board made no reference to any evidence in the record that would equate “one system” with “one sensor.”

As mentioned previously, more than a mere scintilla of evidence is necessary to support the Board's implicit conclusion that “one system” is equal to “one sensor.” Based on the entirety of Evans' disclosure, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support the conclusion that “one system” means “one sensor.”

See id., 217 F.3d 1365, 1370-71 (Fed. Cir. 2000) (underline added).

⁴⁶ *See Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1473 (Fed. Cir. 1997) (“The district court's holding misapprehends the rigors of anticipation. For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art... Although this disclosure requirement presupposes the knowledge of one skilled in the art of the claimed invention, that presumed knowledge does not grant a license to read into the prior art reference teachings that are not there. An expert's conclusory testimony, unsupported by the documentary evidence, cannot supplant the requirement of anticipatory disclosure in the prior art reference itself.”) (emphasis added); *see also Genzyme Corp. v. Atrium Med. Corp.*, 315 F. Supp. 2d 552, 563 (D. Del. 2004) (“For a patent to be anticipated, every element of a patent claim must appear in a single reference. Other references and opinion may be used to reveal what the reference would have meant to those skilled in the art at the time of the invention... For a prior art reference to anticipate a claim, the reference must disclose each and every element of the claim with sufficient clarity to prove its existence in the prior art. Presumed knowledge of one skilled in the art does not allow an expert to read into the reference elements that are not there.”) (emphasis added)

⁴⁷ *See Rapoport v. Dement*, 254 F.3d 1053, 1060 (Fed. Cir. 2001) . In *Rapoport*, the Federal Circuit affirmed the Board's holding that a publication did not anticipate a claim, reasoning as follows (emphasis added):

made an unsupported characterization, Applicant accordingly requests that the USPTO either (1) withdraw the corresponding claim rejection or (2) provide an affidavit setting forth objectively verifiable evidence sufficient to “close the gap” between the characterization and what the reference actually recites.

As can be seen from the foregoing, the USPTO-identified portions of Mulgund, Madden ACQP and Simon do not recite the text of at least Clause [b] of amended Independent Claim 34: “(b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, **said one or more mote-addressed content indexes from the first set of motes including the first metadata**, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, **said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity.**” (Emphasis added)

To Applicant, it appears that the USPTO may try to equate the teaching of the Simon reference and the structure of amended claim 34. The Simon reference recites that a “mesh router is adapted to exclude another mesh router that is associated with a particular certificate” and “an exemplary public key infrastructure (PKI) at the mesh

Having construed the disputed term in the interference count and affirmed the Board's interpretation, we can properly address the merits of Rapoport's anticipation argument. The Board found that the disclosure of the FPR Publication was limited to treatment of anxiety in patients suffering from sleep apnea with buspirone, and did not address treatment of the underlying sleep apnea disorder. What a reference teaches is a question of fact.... There is no disclosure in the FPR Publication of tests in which buspirone is administered to patients suffering from sleep apnea with the intent to cure the underlying condition.... The Board also correctly found that the FPR Publication does not show administering buspirone in any specific amounts to patients suffering from sleep apnea.... We note that there is no mention in the FPR Publication of administering buspirone to a patient at bedtime.... Therefore, for all the reasons stated above, we find that the Board's conclusion that the FPR Publication does not disclose administration of buspirone to patients suffering from sleep apnea to treat sleep apnea is supported by substantial evidence.

⁴⁸ See *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993) (reversing PTO and holding, when PTO presented no evidence to cure *prima facie* differences between patent claim and USPTO assertions regarding what the allegedly invalidating prior art “taught”).

⁴⁹ See *In re McNeil-PPC*, 2008-1546 (Fed. Cir. July 31, 2009).

⁵⁰ See *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000).

router tier in which each mesh router 102 is associated with a certificate 202.” The structure of clause [b] of amended claim 34 recites “(b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, **said one or more mote-addressed content indexes from the first set of motes including the first metadata**, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, **said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity.**” (Emphasis Added) This record evidence in the Simon reference fails to equate to Simon teaching or suggesting that “(b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, **said one or more mote-addressed content indexes from the first set of motes including the first metadata**, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, **said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity.**”

The above recitation of amended clause [b] of Independent Claim 34 and the cited portions of the Madden ACQP Reference are, at first sight, on the first appearance, on the face of it, so far as can be judged from the first disclosure, very different on their faces. The structure of clause [b] of amended claim 34 recites “a first multi-mote index creation agent resident in the first mote of a first set of motes of the plurality of motes administered by a first network administrator and owned or controlled by a first business entity, **said first multi-mote index creation agent configured to (a) aggregate at least a part of a first mote-addressed content index including an index of content of the first set of motes of the plurality of motes to form a first aggregated mote-addressed content index, the first aggregated mote-addressed content index including first metadata indicating that the first set of motes are owned or controlled by the first business entity, and (b)**

transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, said one or more mote-addressed content indexes from the first set of motes including the first metadata, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, said one or more mote-addressed content indexes from the second set of motes **including second metadata indicating that** the second set of motes are owned or controlled by the second business entity.” (Emphasis Added) The cited portions of Madden ACQP recite that “We have designed and implemented an ACQP engine called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network. TinyDB runs on the Berkeley Mica mote platform on top of the TinyOS [23] operating system”. As noted previously, Applicant is not sure what the USPTO has alleged in characterizing the Madden ACQP reference⁵¹, but assuming the USPTO attempts to characterize the Madden ACQP reference as teaching the text of independent claim 34, the record evidence would fail to equate to the Madden TAG teaching or suggesting that (b) expose at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator owned or controlled by the first business entity and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity” as recited in clause [b] of Applicant’s independent claim 34.

To Applicant, it appears that the USPTO may try to close a significant gap between the amended clause [b] and the actual recitations of the Madden ACQP and the Simon reference as shown above⁵² as the USPTO-identified portions of Simon and Madden ACQP References do not recite the text of at least amended Clause [b] of

⁵¹ The USPTO has stated “Madden teaches aggregating at least a part of one or more mote addressed indexes [sensor attributes, such as group id].”

⁵² Neither do the USPTO-identified portions of Simon recite “aggregating at least a part of one or more mote-addressed content indexes from a first set of motes administered by a first network administrator owned or controlled by a first business entity to form a first aggregated mote-addressed content index,” as recited in Clause [a].

Independent Claim 34: “(b) transfer at least a part of the first aggregated mote-addressed content index to an aggregator of (i) a first-set content index from the first set of motes administered by the first network administrator and owned or controlled by the first business entity, said one or more mote-addressed content indexes from the first set of motes including the first metadata, and (ii) a second-set content index from a second set of motes administered by a second network administrator owned or controlled by a second business entity, said one or more mote-addressed content indexes from the second set of motes including second metadata indicating that the second set of motes are owned or controlled by the second business entity.”

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no proffered evidence that would support a finding of fact that Mulgund describes or teaches the text of Clause [b] of amended independent Claim 34. Under the guidelines from the MPEP and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest amended independent Claim 34 for at least these reasons. Applicant has shown by direct quotations that Independent Claim 34 and the USPTO-cited Mulgund reference are very different on their faces. See *supra* (quotation of Claim 34); (quotation of Mulgund); (quotation of Madden) and (quotation of Simon). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the USPTO-cited art is very different from Claim 34, and Applicant has noted that USPTO has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 34 either under the MPEP or under controlling legal standards. See *supra* at pp. 17-23.

Accordingly, insofar as that Mulgund, Madden ACQP and Simon do not recite the text of at least Clauses [b] of Applicant’s amended Independent Claim 34, and insofar

as that USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined to teach at least Clauses [b] of Independent Claim 34, Applicant respectfully points out that under the MPEP guidelines as set forth above, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 34 for at least these reasons. Thus, Applicant respectfully asks USPTO to hold Independent Claim 34 allowable and to issue a Notice of Allowability of same.

With respect to USPTO assertions regarding the teachings of Mulgund, Madden ACQP and Simon, Applicant demonstrated above that the express recitations of Mulgund, Madden ACQP and Simon are not as USPTO alleges, and that USPTO has provided no evidence—let alone the preponderance of the evidence required—to support USPTO assertions as to the factual conclusion as to what Mulgund, Madden ACQP and Simon “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, USPTO has presented no evidence that Mulgund, Madden ACQP and Simon teaches as asserted by USPTO. In addition, Applicant respectfully points out that even if USPTO’s assertions regarding the teachings of Mulgund, Madden ACQP and Simon were supported, such would be of no moment in that USPTO has yet to connect the alleged teaching of Mulgund to the actual express language of Applicant’s Independent Claim 34. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold Independent Claim 34 allowable and issue a Notice of Allowability of same.

**(3) USPTO Interpretation Appears to be Based on
Inadvertent Impermissible Hindsight, Personal
Knowledge, or Official Notice; Applicant
Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund, Madden ACQP and Simon actually recites, the question thus naturally arises as to how USPTO saw Mulgund, Madden ACQP and Simon as “teaching” something related to Clause [b] of Independent Claim 34. Applicant respectfully points out that the Applicant’s Application

is the only objectively verifiable USPTO-cited document of record that shows or suggests what USPTO purports the references to teach. From this and the express recitations of Mulgund, Madden ACQP and Simon as set forth, it follows that USPTO is interpreting Mulgund, Madden ACQP and Simon through the lens of Applicant's application, which is impermissible hindsight use. Thus, at present, USPTO's assertions regarding Mulgund, Madden ACQP and Simon are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold Independent Claim 34 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as USPTO has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of USPTO assertions regarding what the technical material cited by USPTO "teaches," Applicant infers that the USPTO is relying on "personal knowledge" and/or is taking "official notice" of one or more factors to reach the factual conclusion of what the cited technical material "teaches." In view of the foregoing, if USPTO desires to maintain the rejection, in the next communication, Applicant respectfully requests that the USPTO provide an affidavit or declaration setting forth objectively verifiable evidence in support of USPTO's currently unsupported assertions regarding what the cited technical material "teaches" and/or should be interpreted to "teach." *See, e.g., MPEP S 2144.03(C), If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the USPTO Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

2. Amended Dependent Claims 35-37: Patentable for at Least Reasons of Dependency from Independent Claim 34.

Amended Claims 35-37 depend either directly or indirectly from Independent Claim 34. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4. Consequently, Dependent Claims 35-37 are patentable for at least the reasons why Independent Claim 34 is patentable. Accordingly, Applicant respectfully requests that

USPTO hold amended Dependent Claims 35-37 patentable for at least the foregoing reasons, and issue a Notice of Allowability on same.

E. Technical Material Cited by USPTO (Mulgund et al. (U.S. Patent No. 2002/0161751 A1) and Madden et al. ("The Design of an Acquisitional Query Processor for Sensor Networks") Do Not Show or Suggest the Text of Amended Independent Claim 38 and Amended Dependent Claim 39 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Independent Claim 38

Amended Independent Claim 38 recites:

“38. A system comprising:

a first mote comprising a first content type and administered by a first network administrator, the first mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality; and

at least one multi-mote registry resident in said first mote, said at least one multi-mote registry having one or more indicators of a second mote's content to be indexed, the one or more indicators of a second mote's content to be indexed comprise 1) a list of sensing capabilities or control capabilities of the second mote, and 2) associated device-identifiers associated with one or more devices present or available at the second mote, the one or more indicators being received from the second mote, said second mote's content to be indexed comprising a second content type.”

As shown following, (1) USPTO has ignored several express recitations of Independent Claim 38 in his analysis, (2) USPTO is interpreting Mulgund and/or Madden ACQP to “teach” at least a portion of the text of Independent Claim 38 but has not provided any objectively verifiable evidence supporting his interpretation, and (3) modifications/ combinations of technologies cited by USPTO to meet the recitations of Independent Claim 38 are mere conclusory statements, would change the principle of operation, and/or or render the prior art components unfit for their intended purpose.

Under the MPEP standards as set forth herein, USPTO has not met his burden to establish a *prima facie* case of the unpatentability of Independent Claim 38 for any or all of

the forgoing reasons. Accordingly, Applicant respectfully requests that USPTO withdraw his rejections of Claim 38 and Issue a Notice of Allowability for same.

**a) Technical Material Cited by USPTO Does Not Recite
the Text of at Least Amended Independent Claim 38.**

As set forth above, Independent Claim 38 recites:

38. A system comprising:

[a] a first mote comprising a first content type and administered by a first network administrator, the first mote comprising a device formed in a substrate having at least two of a semi-autonomous computing functionality, a communication functionality, or a sensing functionality; and

[b] at least one multi-mote registry resident in said first mote, said at least one multi-mote registry having one or more indicators of **a second mote's content to be indexed, the one or more indicators of a second mote's content to be indexed comprise 1) a list of sensing capabilities or control capabilities of the second mote, and 2) associated device-identifiers associated with one or more devices present or available at the second mote**, the one or more indicators being received from the second mote, said second mote's content to be indexed comprising a second content type.. (Emphasis Added)

As Applicant has incorporated the recitations of claim 39 into independent claim 38, applicant will provide arguments for claims 38 and 39. Concerning this, USPTO has stated as follows:

“As to claim 38, Mulgund teaches:

a first mote [node (2)] (Fig. 1) comprising a first content type [type of data output provided by each sensor of the node] (par. [0026], [0029] in Mulgund) and administered by a first network administrator [first network access point at the left of Fig. 1], the first mote comprising a device formed in a substrate having at least two of a semiautonomous computing functionality, a communication functionality, or a sensing functionality [at least one sensing node (2) in the first set of sensing nodes (Fig. 1) comprising a computational device being a small embedded platform that has one or more sensors (16)] (par. [0026]); and

at least one multi-mote registry [Nodes Table (20)], said at least one multi-mote registry having one or more indicators of a second mote's content to be indexed (par. [0037], [0061] and [0063], second column (CAL) in table 1), the one or more indicators being received from the second mote and excluding the second mote's content [indicators are a distinct entity from mote's content, and when received, are easily distinguished from the mote's content either by a computer program or visually], said second mote's content to be indexed comprising a second content type [type of data output provided by each sensor of the node] (par. [0026], [0029] in Mulgund).

Mulgund does not teach that at least one multi-mote registry is resident in said first mote.

Madden ACQP teaches a multi-mote registry [a short list] resident in a mote (under 2.2 Communication in Sensor Networks, par. 2)..

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by having a multi mote registry resident in the mote in order to keep a list of neighbors who they have heard transmit recently, as well as some routing information about the connectivity of those neighbors (under 2.2 Communication in Sensor Networks, par. 2) (analogous to information about child nodes in Mulgund, Table 1, second column.

As to claim 39, this claim is examined as best understood. Mulgund teaches that the one or more indicators of a second mote's content to be indexed comprise one or more mote-network addresses of the second mote's content to be indexed [unique address of a node that stores node's content] (par. [0037])."

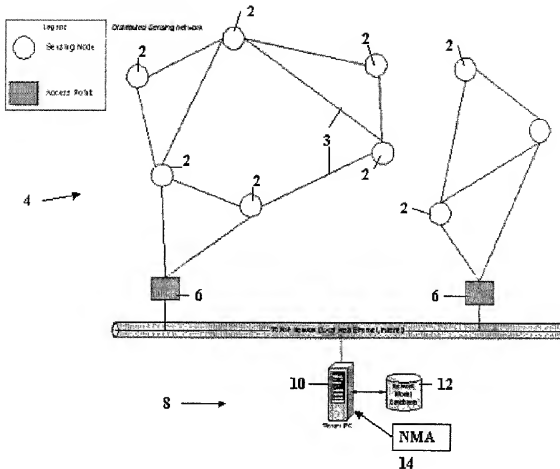
Examiner's *Office Action*, p. 31-32 (3 November 2010).

Applicant respectfully disagrees and traverses the rejection.

(1) USPTO Citations With Regard to Independent Claims 38 and 39:

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by USPTO, and so far as Applicant can discern, Mulgund does not recite the text of clause [b] of Applicant's amended independent claim 38 and claim 39. Rather, the portions of Mulgund identified by USPTO recite as follows:

:



See *Mulgund* (Fig. 1)

The Nodes Table 20 maintains a list of all known sensor nodes 2 in the network 4. Each node is identified by a unique Node Address, which is a primary key for the Nodes Table 20. The Nodes Table also contains a Status field, which is used to indicate whether a node is known to be active. This field is used for marking nodes that have disappeared from the network (which could later reappear). At present, it is anticipated that this Status variable will take on one of just a small set of mutually exclusive values that indicate whether or not the associated node continues to be an active, reachable member of the network 4. Finally, the Nodes Table 20 contains a Timestamp field that indicates when the Status information was last updated. When a node disappears from the network for whatever reason, the corresponding entry in the Nodes Table 20 is not deleted; it is marked as unreachable. The reason for doing so is explained below.

See *Mulgund* (paragraph [0037])

Table 1 provides details of the process by which the network 4 is traversed. The first column of Table 1 shows the node stack maintained by the NMA 14. The second column (CAL) shows the current links from the Node at the top of the stack. The third column (HAL) shows the links that were obtained from the node

at the top of the node stack in a previous sweep of the entire network. The fourth column shows the actions performed inside the for-loop of the pseudo-code.

TABLE 1

Network Traversal Process for Initial Model Construction				
Stack S	CAL	HAL	Action	Visit order
—	—	—	Visit A, Push A	A = 0
A	{AB} {AC}	{AB} {AC}	Visit B, Push B	B = 1
C	{CB} {CA} {CG}	{CB} {CA} {CG}	Visit C, Push C	C = 2
B			Visit G, Push G	G = 3
A				
G	{GC} {GE} {GF}	{GC} {GE} {GF}	Visit E, Push E	E = 4
C			Visit F, Push F	F = 5
B				
A				
F	{FE} {FG}	{FE} {FG}	Pop F	
E				
G				
C				
B				
A				
E	{EF} {EG} {EB} {ED}	{EF} {EG} {EB} {ED}	Visit D, Push D	D = 6
G				
C				
B				
A				
D	{DE} {DB}	{DE} {DB}	Pop D	
E				
G				
C				
B				
A				
E	{EF} {EG} {EB} {ED}	{EF} {EG} {EB} {ED}	Pop E	
G				
C				
B				
A				
G	{GC} {GE} {GF}	{GC} {GE} {GF}	Pop G	
C				
B				
A				
C	{CB} {CA} {CG}	{CB} {CA} {CG}	Pop C	
B				
A				
B	{BD} {BE} {BC}	{BD} {BE} {BC}	Pop B	
A				
A	{AB} {AC}	{AB} {AC}	Pop A	
—	—	—	Check for unreachable nodes. Finish.	

See *Mulgund* (paragraph [0061])

Next, the NMA 14 examines the node at the top of the stack. If the stack is empty, the NMA 14 has completed traversal. If the stack is non-empty, the NMA 14 looks at the node at the top of the stack, and then queries the node for all its link information. On obtaining this information, the NMA 14 compares it to the link information obtained from the node in the previous sweep of the network. No difference between the CAL and HAL for node A 32 is seen. The NMA 14 then examines each link 3 of the currently visited node and the node at the other end of the link. If the NMA 14 has not seen (marked) the node on the other end of the link before, it visits the node on the other end of the link and pushes it on the stack. The NMA 14 then marks the node as visited by assigning a visit order number to it, and by assigning a Timestamp representing the time it was visited. In our example, CAL consists of links {AB} 33, {AC} 35. Nodes B 34 and C 36 are unmarked. The NMA 14 visits node B 34 and pushes it on the stack. The NMA then visits node C 36 and pushes it on the stack. By following a similar procedure, the NMA visits and marks nodes G 38, E 40, and F 42. When node F 42 is at the top of the stack, there is no node reachable from node F that has not been marked. Therefore, the NMA Pops Node F from the stack. When node E 40 reaches the top of the stack, the NMA discovers another node D 44 which has not been marked. The NMA visits it, and pushes it on the stack. At this point, node D 44 does not have links to any unvisited node. The NMA therefore pops D from the stack. Following the algorithm, the NMA continues to pop nodes E, G, C, B, and A until an empty stack remains. At this point, the NMA checks the Node Table 20 to see if any node that was visited in a previous traversal of the network has become unreachable during this traversal. In this case there are no unreachable nodes. That completes a sweep of the network. The next sweep can now be scheduled.

See *Mulgund* (paragraph [0063])

Applicant respectfully points out that Applicant has reviewed the portions of Madden ACQP identified by USPTO, and so far as Applicant can discern, Madden ACQP does not recite the text of clause of Applicant's amended independent claim 38. Rather, the portions of Madden ACQP identified by USPTO recite as follows:

"We have designed and implemented an ACQP engine called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network. TinyDB runs on the Berkeley Mica mote platform on top of the TinyOS [23] operating system. We chose this platform because the hardware is readily available from commercial sources [13] and the operating system is relatively mature. TinyDB has many of the features of a traditional query processor (e.g. the ability to select, join, project, and aggregate data), but, as we will discuss in this paper, also incorporates a number of other features designed to minimize power consumption via acquisitional techniques. These techniques taken in aggregate, can lead to orders of magnitude improvement in power consumption and increased accuracy of query results over

non-acquisitional systems that do not actively control when and where data is collected.”

See *Madden ACQP* (section 1 Introduction, par. 4)

As can be seen from the foregoing, the USPTO-identified portions of Mulgund and Madden ACQP do not recite the text of at least Clause [b] of amended Independent Claim 38: “at least one multi-mote registry resident in said first mote, **said at least one multi-mote registry having one or more indicators of a second mote’s content to be indexed, the one or more indicators of a second mote’s content to be indexed comprise 1) a list of sensing capabilities or control capabilities of the second mote, and 2) associated device-identifiers associated with one or more devices present or available at the second mote, the one or more indicators being received from the second mote**, said second mote’s content to be indexed comprising a second content type.” Mulgund recites “sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it”. (Mulgund paragraph [0026]) Madden ACQP recites “has many of the features of a traditional query processor (e.g. the ability to select, join, project, and aggregate data.” Thus, on its face, the cited text of Mulgund and/or Madden ACQP does not show the text of at least Clause [b] of amended Independent Claim 38. Specifically, the cited text does not show or recite “the one or more indicators of a second mote’s content to be indexed comprise 1) a list of sensing capabilities or control capabilities of the second mote, and 2) associated device-identifiers associated with one or more devices present or available at the second mote.”.

Applicant has reviewed the USPTO-cited portions of Mulgund, Madden and/or Simon and is unable to locate a recitation of clause [b] of Claim 38. Applicant further respectfully points out that the USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to why the text of the reference passages should be interpreted to teach clause [b] of amended Independent Claim 38.

Applicant respectfully notes: “[W]hat a reference teaches is a question of fact.” *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001)

(referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is no proffered evidence that would support a finding of fact that Mulgund, Madden and/or Simon describes or teaches the text of Clause [b] of Independent Claim 38. Under the guidelines from the MPEP and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 38 for at least these reasons.

Applicant has shown by direct quotations that amended Independent Claim 38 and the USPTO-cited Mulgund reference are very different on their faces. See *supra* (quotation of Claim 38); (quotation of Mulgund); and (Quotation of Madden ACQP). Insofar that Applicant has shown that “*at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure*” the USPTO-cited art is very different from amended Claim 38, and Applicant has noted that USPTO has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of amended Claim 38 either under the MPEP or under controlling legal standards.

Accordingly, insofar as that Mulgund and/or Madden ACQP do not recite the text of at least Clauses [b] of Applicant’s Independent Claim 38, and insofar as that USPTO has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund could be modified/combined with Madden ACQP to teach at least Clause [b] of amended Independent Claim 38, Applicant respectfully points out that under the MPEP guidelines as set forth above, the USPTO-cited technical material does not establish a *prima facie* case of the unpatentability of amended Independent Claim 38 for at least these reasons. Thus, Applicant respectfully asks USPTO to hold Independent Claim 38 allowable and to issue a Notice of Allowability of same.

With respect to USPTO assertions regarding the teachings of Mulgund and/or Madden ACQP, Applicant demonstrated above that the express recitations of Mulgund

and/or Madden ACQP are not as USPTO alleges, and that USPTO has provided no evidence—let alone the preponderance of the evidence required—to support USPTO assertions as to the factual conclusion as to what Mulgund and/or Madden ACQP “teaches.” Accordingly, Applicant respectfully points out that in view of the foregoing, USPTO has presented no evidence that Mulgund and/or Madden ACQP teaches as asserted by USPTO. In addition, Applicant respectfully points out that even if USPTO’s assertions regarding the teachings of Mulgund and/or Madden ACQP were supported, such would be of no moment in that USPTO has yet to connect the alleged teaching of Mulgund and/or Madden ACQP to the actual express language of Applicant’s amended Independent Claim 38. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold Independent Claim 38 allowable and issue a Notice of Allowability of same.

**(2) USPTO Interpretation Appears to be Based on
Inadvertent Impermissible Hindsight, Personal
Knowledge, or Official Notice; Applicant
Requests Issuance of Notice of Allowability**

Given that Applicant has shown, above, what Mulgund and/or Madden ACQP actually recites, the question thus naturally arises as to how USPTO saw Mulgund and/or Madden ACQP as “teaching” something related to Clause [b] of Independent Claim 38. Applicant respectfully points out that the Applicant’s Application is the only objectively verifiable USPTO-cited document of record that shows or suggests what USPTO purports the references to teach. From this and the express recitations of Mulgund as set forth, it follows that USPTO is interpreting Mulgund and/or Madden ACQP through the lens of Applicant’s application, which is impermissible hindsight use. Thus, at present, USPTO’s assertions regarding Mulgund and/or Madden ACQP are untenable. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that USPTO hold Independent Claim 38 allowable and issue a Notice of Allowability of same.

In the alternative and/or in addition to the foregoing, as USPTO has provided no objectively verifiable evidence, nor argument based on objectively verifiable evidence, in support of USPTO assertions regarding what the technical material cited by USPTO “teaches,” Applicant infers that the USPTO is relying on “personal knowledge” and/or is taking “official notice” of one or more factors to reach the factual conclusion of what the cited technical material “teaches.” In view of the foregoing, if USPTO desires to maintain the rejection, in the next communication, Applicant respectfully requests that the USPTO provide an affidavit or declaration setting forth objectively verifiable evidence in support of USPTO’s currently unsupported assertions regarding what the cited technical material “teaches” and/or should be interpreted to “teach.” *See, e.g., MPEP S 2144.03(C), If Applicant Challenges a Factual Assertion as Not Properly Officially Noticed or Not Properly Based Upon Common Knowledge, the USPTO Must Support the Finding with Adequate Evidence*, and 37 C.F.R. 1.104(d)(2).

IV. REJECTION ARGUMENT: THE OFFICE ACTION ERRED IN REJECTING CLAIM 1-39 UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

The Office action, at page 8, recites, “Claims 38-39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.”

Applicant respectfully traverses the rejections of claims 1-39.

Applicant has amended claim 38 (and cancelled claim 39) that was rejected to remove the recitation of “excluding the second mote’s content” rendering the rejection moot. Therefore, application requests withdrawal of the rejection and reconsideration and allowance of claims 38.

V. REJECTION ARGUMENT: THE OFFICE ACTION ERRED IN REJECTING CLAIMS 1-37 UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

The Office action, at page 8, recites, "Claims 1-37 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention."

Applicant respectfully traverses the rejections of claims 1-37.

Applicant has amended claims 1, 17, 33, and 34 as follows "the first (second) set of motes is administered by a first (second) network administrator and owned or controlled by a first (second) business entity" (emphasis added) to clarify whether a set of motes is owned/controlled by a business entity or a network administrator is owned/controlled by a business entity. Therefore, Applicant requests withdrawal of the rejection and reconsideration and allowance of claims 1, 17, 33, and 34.

Claims 4-7 were rejected because "As to claims 4-7, it is unclear whether step of "obtaining" further limits the step of aggregating or the step of creating , as in claim 3." The "obtaining" step is comprised in the "creating" step as specified in claims 4-9. Therefore, Applicant requests withdrawal of the rejection and reconsideration and allowance of claims 4-9.

Claims 18 – 32 were rejected under Section 112, second paragraph. Specifically the USPTO has stated "As to claims 18-32, the structure disclosed in the written description of the specification is the corresponding structure only if the written description of the specification or the prosecution history clearly links or associates that structure to the function recited in a means-plus-function claim limitation under 35 U.S.C. 112, sixth paragraph." Claim 32 has been cancelled. Claims 18 and 29 have been amended to recite that the agent further comprises means for receiving (claim 18) and means for creating (claim 29). Claims 19-28 and 30-32 are respectively dependent on claims 18 and 29. As these amended claims are supported by the specification, Applicant requests withdrawal of the rejection and reconsideration and allowance of claims 18 - 32.

Applicant has amended claim 35 to clarify which content indexes from the first set of motes of claim 34 are the "indexed mote-addressed content indexes" and whether a "computing device" is the same as an "aggregator" of claim. Therefore, application requests withdrawal of the rejection and reconsideration and allowance of claim 35.

VI. CONCLUSION

Applicant may have during the course of prosecution cancelled and/or amended one or more claims. Applicant notes that any such cancellations and/or amendments will have transpired (i) prior to issuance and (ii) in the context of the rules that govern claim interpretation during prosecution before the United States Patent and Trademark Office (USPTO). Applicant notes that the rules that govern claim interpretation during prosecution form a radically different context than the rules that govern claim interpretation subsequent to a patent issuing. Accordingly, Applicant respectfully submits that any cancellations and/or amendments during the course of prosecution should be held to be tangential to and/or unrelated to patentability in the event that such cancellations and/or amendments are viewed in a post-issuance context under post-issuance claim interpretation rules.

Insofar as that the Applicant may have during the course of prosecution cancelled/amended claims sufficient to obtain a Notice of Allowability of all claims pending, Applicant may not have during the course of prosecution explicitly addressed all rejections and/or statements in Examiner's Office Actions. The fact that rejections and/or statements may not be explicitly addressed during the course of prosecution should NOT be taken as an admission of any sort, and Applicant hereby reserves any and all rights to contest such rejections and/or statements at a later time. Specifically, no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended (e.g., with respect to any facts of which USPTO took Official Notice, and/or for which USPTO has supplied no objective showing, Applicant hereby contests those facts and requests express documentary proof of such facts at such time at which such facts may become relevant). For example, although not expressly set forth during the course of prosecution, Applicant continues to assert all points of (e.g. caused by, resulting from, responsive to, etc.) any previous Office Action, and no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended. Specifically, insofar as that Applicant does not consider the cancelled/unamended claims to be unpatentable, Applicant hereby gives notice that it may intend to file and/or has filed a continuing application in order prosecute such cancelled/unamended claims.

With respect to any cancelled claims, such cancelled claims were and continue to

be a part of the original and/or present patent application(s). Applicant hereby reserves all rights to present any cancelled claim or claims for examination at a later time in this or another application. Applicant hereby gives public notice that any cancelled claims are still to be considered as present in all related patent application(s) (e.g. the original and/or present patent application) for all appropriate purposes (e.g., written description and/or enablement). Applicant does NOT intend to dedicate the subject matter of any cancelled claims to the public.

Should this case go to appeal, Applicant reserves the right to submit argument, rebuttal evidence, or legal authority in the instance the Board of Patent Appeals and Interferences finds that the USPTO has met his burden in establishing a *prima facie* case of unpatentability of the various appealed claims. Applicant further reserves the right to submit argument, rebuttal evidence, or legal authority if new claim interpretations or definitional citations are raised on appeal. The fact that argument, rebuttal evidence, or legal authority may not have been explicitly discussed during the course of prosecution should NOT be taken as an admission or waiver of any sort, and Applicant hereby reserves any and all rights to discuss (e.g. make explicit, produce, or explain) such rebuttal evidence at a later time.

The Examiner is invited to contact Steven Stewart at (206) 321-9072 or Dale R. Cook at (425) 467-2260 with any issues that may advance prosecution of the application on the merits.

Respectfully submitted,

2/2/2011

Date

/Steven C. Stewart/

Steven C. Stewart

Registration No. 33,555